



USAID | **ASIA**
FROM THE AMERICAN PEOPLE



PROCEEDINGS: Second U.S. Indian Ocean Tsunami Warning System (IOTWS) Program Coordination Workshop

January 30-31, 2006 Bangkok, Thailand

May 2006

Prepared for the United States Agency for International Development



USAID
FROM THE AMERICAN PEOPLE



USGS
science for a changing world



U.S. INDIAN OCEAN TSUNAMI WARNING SYSTEM (IOTWS) PROGRAM

PROCEEDINGS: Second U.S. Indian Ocean Tsunami Warning System (IOTWS) Program Coordination Workshop

January 30-31, 2006
Conrad Hotel
Bangkok, Thailand

Prepared for U.S. Agency for International Development
by IRG-Tetra Tech Joint Venture under Contract No. EPP-I-02-04-00024-00



US IOTWS Program Document No. 03-IOTWS-06

DISCLAIMER

The views expressed in this document do not necessarily reflect the views of the United States Agency for International Development or the United States Government

TABLE OF CONTENT

| | |
|--|----|
| I. INTRODUCTION..... | 1 |
| II. WORKSHOP OBJECTIVES..... | 2 |
| III. US IOTWS PROGRAM ACTIVITY UPDATES/ISSUES..... | 3 |
| IV. DONOR COORDINATION OPPORTUNITIES AND MECHANISMS FOR COORDINATION | 6 |
| V. IDENTIFYING ADDITIONAL COORDINATION MECHANISMS (FACILITATED DISCUSSION)..... | 9 |
| VI. BREAKOUT SESSIONS..... | 9 |
| Breakout Session 1: National Warning Center and Disaster Management Capacity Building | 9 |
| Breakout Session 2: National and Local Warning Communications System..... | 11 |
| Breakout Session 3: Coastal Community Resilience and Hazard analysis..... | 13 |
| Breakout Session 4: Coastal Disaster Mitigation Policies and Practices..... | 15 |
| Annexes | |
| Annex A: Workshop Participants..... | 18 |
| Annex B: Workshop Agenda..... | 26 |
| Annex C: Summary Table of Project Activity Sheets..... | 28 |

List of Acronyms and Abbreviations

| | |
|----------------|---|
| ADPC | Asian Disaster Preparedness Center |
| CCR | Coastal Community Resiliency |
| CONOPS | Concept of Operations procedures |
| COP | Chief of Party |
| CTO | Cognizant Technical Officer |
| DAD | Development Assistance Database |
| DCOP | Deputy Chief of Party |
| DFID | Department for International Development |
| DIPECHO | Department for Disaster Preparedness under the European Commission's Humanitarian Aid Department |
| ICG | Intergovernmental Coordination Group of the IOC |
| ICS | Incident Command System |
| IOC | Intergovernmental Oceanographic Commission of UNESCO |
| IOTWS | Indian Ocean Tsunami Warning System (as used to describe U.S. government program) |
| IOTWS | Indian Ocean Tsunami Warning and Mitigation System (full name of ICG for Indian Ocean, ICG/IOTWS) |
| ICG/IOTWS-I | Intergovernmental Coordination Group (ICG) IOTWS meeting in Perth, Australia |
| ICG-IOTWS-II | IOC Intergovernmental Coordination Group (ICG) IOTWS meeting in Hyderabad, India |
| IQC | Indefinite Quantity Contract |
| IR | Intermediate Result |
| IRG-Tetra Tech | International Resources Group & Tetra Tech Joint Venture |
| ISDR | the International Strategy for Disaster Reduction |
| NDWC | National Disaster Warning Center |
| NGO | Non-Governmental Organization |
| NOAA | National Oceanic and Atmospheric Administration (United States) |
| PA | Program Area |
| PDC | Pacific Disaster Center |
| PI | Program Integrator (USAID contractor supporting US IOTWS Program) |
| PMP | Performance Management Plan |
| RDM/A | Regional Development Mission/Asia of USAID |
| RFA | Request for Application |
| ROP | Regional Office of Procurement |
| SGP | Small Grants Program |
| SOW | Statement of Work |
| SpO | Special Objective |
| TARNS | Tsunami Alert Rapid Notification System |
| TRC | TsunamiResilient Communities |
| Tt | Tetra Tech, Inc. |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| USAID | U.S. Agency for International Development |
| USDA/FS | U.S. Department of Agriculture/Forest Service |
| USG | United States Government |
| USGS | U.S. Geological Survey |
| USTDA | U.S. Trade and Development Agency |
| WMO | World Meteorological Organization |

I. INTRODUCTION

Since the December 2004 tsunami, governments, donors, nongovernmental organizations (NGOs), and other organizations have made concerted efforts to develop tsunami warning system capabilities in the Indian Ocean, primarily through the international process led by the UNESCO Intergovernmental Oceanographic Commission (IOC). Addressing the “end-to-end” requirements of a tsunami warning system—from deep ocean detection systems to local community readiness—is a monumental task.

To date, significant international progress has been made through the IOC process to establish primary tsunami detection capabilities, including seismic and sea-level detection systems, hazard modeling, and warning center capabilities. However, as discussed during the most recent IOC Intergovernmental Coordination Group (ICG) IOTWS meeting in Hyderabad, India (ICG-IOTWS-II), more support and coordination is critical to address downstream requirements. The purpose of the Second U.S. Indian Ocean Tsunami Warning System (IOTWS) Program Coordination Workshop was to focus on these downstream needs. The workshop addressed four major categories

(1) National warning center and disaster management capacity building; (2) National and local warning communications systems; (3) Coastal community resilience and hazard analysis; and (4) Coastal disaster mitigation policies and practices.

Representatives from the international donor community, NGOs, and partner institutions participated in the workshop (see Annex A for a complete list of registrants). US IOTWS Program team members and key regional donors first made presentations to provide updates on key activities and identify mechanisms for coordination and collaboration. Participants then divided into breakout sessions to prioritize national and local efforts related to these activities, identify opportunities for coordination and barriers to implementation, and develop action items and schedules to address these issues (see Annex B for workshop agenda). A summary of these discussions is provided below.

Welcome from RDM/A Director

Tim Beans, Mission Director, U.S. Agency for International Development, Regional Development Mission/Asia, welcomed the participants. He stressed that the contributions of everyone in the room have made a tremendous impact on the development of a warning system at all levels. Regionally, the US IOTWS Program is actively participating through the IOC to develop the regional system and is participating in several of the workgroups to focus on specific aspects of the regional system. For example, the US IOTWS Program Integrator (PI) contractor assisted with the consolidation of the IOC regional country assessments carried out in mid-2005.

Mr. Beans stated that the US IOTWS Program is very active at the national level and is establishing a partnership with the Thai National Disaster Warning Center (NDWC) to develop a nationally-based communications system. Team members will soon be conducting the first planning forum with the NDWC to start the Tsunami Alert Rapid Notification System or TARNs program in Thailand. In addition, US IOTWS Program team members recently completed the first in a series of training and planning workshops in Sri Lanka to integrate an “Incident Command System” into an emergency planning and response program for the country.

At the local level, Mr. Beans said that the US IOTWS Program is beginning to develop a Coastal Community Resiliency (CCR) Program¹ that will be implemented locally. This program will help communities prepare for and respond effectively to a variety of natural disasters.

In addition, the team started to train various national and local government officials and scientists to help build capacity for warning detection and communication in the region. For example, the U.S. Geological Survey (USGS) conducted a workshop in Jakarta in November to help standardize protocols for sharing seismic data in the region. The USGS is also conducting a paleo-seismology training for scientists from Indonesia, Thailand, Sri Lanka, and India.

Mr. Beans concluded by stressing the need to build on these initial efforts and increase the training and technical exchanges throughout the region and really fill in the gaps to truly establish an “end-to-end” system. The regional and national focus needs to be brought down to the local level where ultimately many of these activities will be implemented. To do that, partners must be engaged throughout the region to strategically coordinate efforts. This can be accomplished through the IOC/IOTWS process, which will lead the overall coordination for this effort, and the US IOTWS Program will continue to remain active in supporting the technical needs and warning system objectives of IOC/IOTWS members. He emphasized that the sustainability of these activities must be considered, and that is why the US IOTWS Program is actively involved in developing partnerships to help achieve this goal, in addition to working closely with our counterparts at the IOC and in national and local governments.

II. WORKSHOP OBJECTIVES

Orestes Anastasia, US IOTWS program manager, USAID Regional Development Mission/Asia, outlined the objectives for the workshop. Following calls for more attention to national- and local-level tsunami warning and mitigation requirements at the recent IOC/ICG meeting in Hyderabad, India (ICG/IOTWS-II), USAID convened this workshop to help the US IOTWS Program team and partner institutions to promote coordination and implementation planning for activities in the five US focus countries (Indonesia, Sri Lanka, Thailand, India, and the Maldives).

The workshop will focus on partnership through action by developing targeted action plans that improve coordination, integration, and synergy in technical areas. He hoped that this workshop would be the starting point for a much broader effort to engage national and local country partners as well as to involve other implementing partners in the region by building a stronger foundation for communicating with national/local governments, and implementing downstream program activities. The US IOTWS Program team will finalize its work plan and performance monitoring plan (PMP) during this workshop, and he encouraged the participants to review the draft that was provided to them.

Mr. Anastasia then identified areas on which the US IOTWS Program and its partners should continue to focus. He first highlighted the need for the US IOTWS Program to make a concerted effort to partner with Indonesia and India to identify opportunities for the transfer of U.S. technical expertise to strengthen IOTWS capabilities in these countries. In addition, there needs to be a renewed attention to sustainability and leveraging, especially in regards to the private sector. Finally, Mr. Anastasia recommended that the US IOTWS Program team work with the donors to identify additional opportunities for improved collaboration to fill gaps and unmet needs, identify new partners, and establish a firm foundation for further growth of the program.

¹ The US IOTWS Program team changed the name of the program from TsunamiResilient Communities (TRC) Program to Coastal Community Resiliency (CCR) Program to more accurately reflect the scope of the program which will use a multi-hazard approach to prepare and protect coastal areas from natural disasters.

III. US IOTWS PROGRAM ACTIVITY UPDATES/ISSUES

US IOTWS Program team members highlighted key activities, progress to date, and long-term objectives. Team members include representatives from USAID, the National Oceanic and Atmospheric Administration (NOAA), USGS, U.S. Department of Agriculture/Forest Service (USDA/FS), U.S. Trade and Development Agency (USTDA), and the PI. The US IOTWS Program team is conducting activities at the regional level through participation in the IOC process, at the national level through assisting national governments develop consistent policies and procedures for disaster management and warning communications, and at the local level through programs that will better prepare communities to respond to coastal hazards. A copy of the draft US IOTWS Program work plan was provided to all participants.

U.S. Agency for International Development (USAID)

Orestes Anastasia, USAID, provided an overview of US IOTWS Program activities at the regional, national, and local levels as well as a summary of activities that support overall program operations.

Regional Level Support. He highlighted that the US IOTWS Program team is providing technical support through the IOC/ICG process. The US IOTWS Program team supported the IOC national assessments and the development of the consolidated report of the assessments. In addition, the team is providing technical contributions to the working groups in the areas of sea-level gauges, detection buoys, seismic systems, risk mapping and modeling, and systems operations. He emphasized that the donor coordination role through the ICG will also expand through the creation of an additional working group (WG6)² to focus on downstream needs. In addition, the ICG has adopted the conceptual design that was initially proposed by the US delegation at the Perth meeting in August of 2005 (ICG/IOTWS-I).

National and Local Level Support. There are several national- and local-level programs being initiated by the US IOTWS Program team to strengthen the warning and response capabilities in the Indian Ocean countries. For example, USGS will be conducting seismology training and exchange programs throughout the region. The USDA/FS has initiated the development of an Incident Command System (ICS) program with the government of Sri Lanka. USTDA, through a grant to the Pacific Disaster Center (PDC) is working with the NDWC to develop Concept of Operations (CONOPS) procedures. In a related activity, USDA/FS and NOAA are working with the government of Thailand to develop TARNs. NOAA is also working to develop radio-internet technology (RANET), a radio-internet technology for warning communications, as well as conducting coastal hazard mapping and inundation modeling. Finally, NOAA, USAID, the Asian Disaster Preparedness Center (ADPC), and the PI are developing a CCR Program that includes coastal mitigation policies and practices.

US IOTWS Program Operations. The US IOTWS Program web site was launched in November 2005 and is widely used. The PI has identified country coordinators for Indonesia, Sri Lanka, India, and the Maldives to help the US IOTWS program focus on downstream needs. In addition, procedures have been developed to support the training and exchange program for the U.S. team and its partners.

The small grants program is moving forward, and it is anticipated that grant applications will be accepted by early March. More information on the small grants requirements will be available on the US ITOWS Program web site at www.us-iotws.gov.

² WG6 refers to the proposed new working group that was identified at the ICG/IOTWS-II meeting in Hyderabad, India, to focus on downstream needs.

Participants received a copy of the draft US IOTWS Program Integrated Work Plan and Performance Monitoring Plan (PMP), which outlines the key activities for the team over the next 2 years. To date, \$750,000 out of the \$14.1 M of USAID-funded activities has been expended.

National Oceanic and Atmospheric Administration (NOAA)

Curt Barrett, NOAA program manager, provided a summary of recent NOAA activities. He stated that NOAA's goals for the IOTWS are to support the IOC in the design of a regional system that is built within a multi-hazard framework and is completely interoperable. In addition, the system must be completely sustainable, and therefore, there is a need for a strong capacity-building effort.

Specific technical support at the regional level includes providing support to the IOC on the conceptual design of the regional system, participation in the World Meteorological Organization's working groups, and developing a Concept of Operations for regional watch providers. In addition, NOAA will provide interim notification of potential tsunamis from the Pacific Tsunami Warning Center, deploy up to two Deep Ocean Assessment and Reporting of Tsunami (DART) systems and provide training on these systems, and upgrade selected tide stations for the Indian Ocean region. To support the development of capabilities for regional tsunami detection, prediction, and warning formulation, NOAA will refine a tsunami propagation model for the Indian Ocean region and implement the Method of Splitting Tsunami (MOST) inundation model that includes a web interface.

NOAA will support national-level activities through the upgrade of global telecommunications systems (GTS) for Sri Lanka and Maldives, development of a Wide Area Network (WAN) for Thailand, and development of RANET, a last-mile communications system, for Indonesia, Maldives, and Sri Lanka.

Finally, at the local level NOAA will enhance communities' ability to prepare and respond to coastal hazards through the development of a CCR Program in Sri Lanka and the Maldives; and develop and implement local community hazard analysis tools. Many of these activities will be conducted using regional training, technical exchanges, and lessons learned workshops. For example, NOAA expressed an interest to integrate classroom training with distance learning courses, making the activities more regional. The concept, tsunami simulator, would provide an umbrella structure to various distance learning training materials that have been developed for the IOTWS.

U.S. Geological Survey (USGS)

Shane Detweiler, USGS project manager, provided an update on USGS activities. He stressed that other donors are working on seismic issues in the Indian Ocean region, and there is a need to coordinate these activities to prevent duplication of effort.

USGS is supporting the US IOTWS Program at the regional level through participation on the IOC, providing input on seismic activities. In addition, USGS is developing regional hazard and risk maps in conjunction with the World Seismic Safety Initiative (WSSI).

At the national level, USGS is working with selected countries to upgrade their seismic instruments and data processing capabilities. For example, USGS has signed an agreement with CalTech to install and upgrade SuGAR network stations in Indonesia, which will provide data within minutes of an event.

USGS is also helping to increase the capacity of Indian Ocean countries in collecting, interpreting, and disseminating seismic data through intensive training. USGS has developed a series of week-long seismic training courses that will be offered in Thailand, Sri Lanka, India, Indonesia, and the Maldives. In general,

the courses will include instruction on real-time seismic data processing and monitoring, data transmission, and standard tsunami warning protocols.

U.S. Department of Agriculture/Forest Service (USDA/FS)

Deanne Shulman, USDA/FS program manager, provided an update on the Forest Service activities. The USDA/FS is supporting the US IOTWS Program at both the national and local level. Ms. Shulman clarified USDA/FS's role in international work and outlined the Forest Service's contributions to the US IOTWS Program. These activities include the following:

Incident Command System (ICS). The USDA/FS is leading the development of ICS activities in Sri Lanka. There have been several meetings and workshops relating to the development of ICS in Sri Lanka, culminating with the preparation of a draft conceptual paper for integrating the ICS into the country's disaster management system. Next steps include more focused training in Sri Lanka in early April, and a two-week study tour to the United States in June or July of 2006.

Tsunami Alert Rapid Notification System (TARNS). The USDA/FS and NOAA are providing program design, process, administration, and technical expertise for the development of a TARNS pilot program in Thailand. To date, there have been several consultative visits regarding TARNS in Thailand. A draft Memorandum of Agreement (MOA) between USAID and the NDWC is being finalized with the first workshop planned for May 2006. The TARNS program will serve as a showcase and bring value to the entire IOTWS. Ms. Shulman said there is complacency now in Thailand because there are visible signs of the warning system (loud speakers, evaluation route signs) so people feel the system is in place. She emphasized that the focus of the USDA/FS effort is on systems, not technology.

U.S. Trade and Development Agency (USTDA)

Ms. Rachaneekorn Sriswasdi (Jiab), provided a summary of USTDA's activities under the US IOTWS Program. As part of the US IOTWS Program team, USTDA provides specific opportunities for private sector expertise and investment to support development in communications, emergency operations systems, and technologies necessary for the tsunami warning system. USTDA is facilitating dialogues and linkages between U.S. and Asian businesses, the USG, and others who are working directly with regional institutions and national governments to identify entry points for accessing leaders in Asia's technology and communications markets.

Ms. Jiab then introduced Dr. Allen Clark from PDC. PDC received a grant through the USTDA to work with the Thai NDWC to provide technical assistance to enhance NDWC capacity for multi-hazard early disaster warning via integration of technologies for analytical and "decision support" purposes, enhance procedures with "sound practices", assist in development of CONOPS Process automation (data and alert processing), and conduct training and education.

Program Integrator (Contractor)

Dr. Alan White, the chief of party for the US IOTWS Program Integrator (PI), provided an update of PI activities as they relate to the program areas that are outlined in the work plan.

The PI is supporting activities at the regional, national, and local level. At the regional level, the PI supported preparation of the Consolidated IOC Assessment Report and presented it to the IOC in November 2005. The PI is currently finalizing a contract with the University of Rhode Island (URI) to conduct inundation modeling in Ranong and apply results to the CCR program. In addition, the PI is providing support for USGS to conduct seismic technical exchanges throughout the region. At the

national level, the PI has been supporting the various USG activities such as ICS, and TARNs. At the local level, the PI is supporting the development of a CCR program that will include elements of coastal mitigation and coastal zone management.

As part of US IOTWS programmatic activities, the PI has developed the project web site and developed accompanying outreach materials such as fact sheets and schematics. The PI has developed a draft Program Work Plan and Program Performance Monitoring Plan that was distributed to all meeting participants. The final work plan will be posted on the project web site at www.iotws.org. Finally, Dr. White said that the PI has developed a draft Small Grants Manual and will initiate grant applications as part of the implementation of the program.

IV. DONOR COORDINATION OPPORTUNITIES AND MECHANISMS FOR COORDINATION

To help stimulate discussion in the breakout sessions, several donor organizations highlighted priorities for the IOTWS and provided examples of successful coordination and identified mechanisms that can be used to further collaboration among the partners in the Indian Ocean region. In addition to the presentations, several organizations such as United Kingdom's Department for International Development (DFID) and the Department for Disaster Preparedness under the European Commission's Humanitarian Aid Department (DIPECHO), provided summary information to be included in the discussions. Specific presentations are as follows:

Mr. Robert Piper, Chief of Staff, United Nations Office of the Special Envoy for Tsunami Recovery

Mr. Piper explained the role of U.N. Special Envoy Bill Clinton, the Envoy's priorities and expectations, and how the Office might support IOTWS development in 2006.

He said that the various roles of the Special Envoy include the following: (1) serving as a spokesperson; (2) acting as a coordinator beyond the United Nations (Global Consortium for Tsunami Recovery); (3) providing a check on the accountability process in both a fiduciary sense as well as ensuring that the recovery efforts reflect the needs of the final beneficiaries; and (4) acting as a champion of "Building Back Better."

Mr. Piper said that President Clinton's priorities for 2006 include early warning as a critical element of the wider disaster reduction agenda and an integral part of President Clinton's "build back better" framework. Early warning includes both factoring and mapping risk reduction, getting the warning system up and running, and ensuring that the warning system is multi-hazard. He was pleased to see that many of these issues have already been discussed at this workshop. In addition, Mr. Piper said that President Clinton has been actively involved in fundraising at the country level and leveraging private and NGO participation. Mr. Piper felt that this is where the Special Envoy can be particularly helpful to the IOTWS.

Dr. Laura Kong, Director, IOC/International Tsunami Information Center (IOC/ITIC)

Dr. Kong provided an overview of the IOC and the ICG/IOTWS activities in the focus countries and the emerging emphasis on downstream issues. Dr Kong stated that the United Nation's role is to define the proper scale of the problem and then identify its solution. The system developed must be fully owned by the Indian Ocean rim countries, based on international multilateral cooperation, based on an open and free exchange of data, protect all countries in the Indian Ocean basin, and be transparent and accountable to all members.

Dr. Kong then provided an update of ICG activities and highlighted the most recent ICG/IOTWS-II meeting in Hyderabad, India. Much progress was made in the workgroup sessions. An additional working group (WG6) was proposed for national/local systems and donor coordination. This working group would most likely include the participation of disaster management officials and NGOs such as the International Federation of the Red Cross/Red Crescent Societies and the private sector. It is anticipated that they will develop an overall strategy document based on the ISDR initial draft that is consistent with IOC core system implementation. At the national level, there will be increased coordination with downstream stakeholders that will be facilitated through the disaster risk reduction national platforms to ensure broader-based ownership.

Dr. Maryam Golnaraghi, Chief of Disaster Prevention and Mitigation, World Meteorological Organization (WMO)

Dr. Golnaraghi provided an overview of the WMO's contributions to the development of tsunami early warning systems. The WMO was established in 1950 as a special agency under the United Nations to focus on technical and scientific matters related to weather, water, and climate. There are 187 member countries, and they have a coordinated network of meteorologists, hydrologists, and climate scientists that work through the National Meteorological and National Hydrological Services.

For the development of a tsunami early warning system, the WMO is working in partnership with the United Nations Educational, Scientific, and Cultural Organization's (UNESCO) IOC, the International Strategy for Disaster Reduction (ISDR), and other agencies. WMO is contributing its infrastructure and relevant expertise and has established a WMO Tsunami Task Team. Specifically, the WMO is providing technical support to the GTS and the evolving new WMO Information System (WIS); technical advice to regional and national tsunami centers; enhancement of multi-hazard national alert, warning and response mechanisms (Support National Meteorological Services); identification of user-requirements for and promotion of utilization of satellites data and products for the IOTWS; enhancement of maritime safety activities; and integration of early warning systems within a multi-hazard framework (e.g., tropical cyclones, storm surges).

Mr. Earl Kessler, Deputy Executive Director, Asian Disaster Preparedness Center (ADPC)

Mr. Kessler provided an overview of ADPC's role in the US IOTWS Program as part of the PI team and highlighted opportunities to support downstream concerns. ADPC's mission is to reduce the impact of disasters on communities and countries in Asia and the Pacific by raising awareness and enhancing knowledge and skills; strengthening sustainable institutional mechanisms; and facilitating the exchange of information, experience, and expertise. ADPC established a Regional Consultative Committee on Disaster Management (RCC) that includes 30 heads of national disaster management organizations from 25 Asian countries.

Mr. Kessler then briefly reviewed the five technical focus teams within ADPC. These teams include Climate Risk Management, Community-Based Disaster Risk Management, Disaster Management Systems, Public Health in Emergencies, and Urban Disaster Risk Management. Because of the extensive network that ADPC has in many of the tsunami-affected countries, it can provide direct support at the local level to strengthen tsunami preparedness and response of the communities.

Mr. Aidan Cox, United Nations Development Program (UNDP)

UNDP has developed a Development Assistance Database (DAD) to address the challenge that governments in the tsunami-affected region are having with monitoring the sources of funding and numbers of organizations involved in relief and reconstruction efforts. Databases have been developed for Sri Lanka, the Maldives, Thailand, and Aceh, Indonesia. These databases are customized for each region and are installed on servers located in the nodal government agency. An aid coordination team has been set up and trained. Development partners then provide project-level information on commitments, disbursements, expenditures, funding sources, implementers, sectors, locations, and key outputs and progress toward these outputs.

Mr. Cox then led the participants through the database, which is located at <http://tsunamitracking.org/dadregional/>. He said that in the future, they hope to be able to track private sector contributions as well.

United Kingdom DFID

Note: DFID was unable to attend the workshop but provided the following statement.

DFID is very supportive of the establishment of a regional tsunami warning system for the Indian Ocean, as a means towards reducing the vulnerability of coastal communities to natural disasters. Since the Phuket conference in January last week, we have supported and endorsed the leadership of UN-ISDR and UNESCO-IOC in designing this system, and we continue to do so.

We strongly support the emphasis given by the ISDR-IOC team on affected country ownership of this process. In Hyderabad last month, at the occasion of the second meeting of the Inter-Governmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS) we expressed our concerns about the gap between the development of this system and its application at the level of affected communities. We therefore support the proposal in Hyderabad to establish a [sixth] working group in the ICG-IOTWS to work on *mitigation, preparedness and response*, under UN-ISDR leadership.

We have set aside 10% of our recovery funding for support to activities that will help reduce poor people's vulnerability to such events in the future. The focus of this programme is on multiple hazards, but priority is given to tsunamis where this is seen to be an important local priority. We are currently negotiating proposals to strengthen country capacities from Indonesia, Sri Lanka and Nepal, in collaboration with local UNDP teams. A DFID team is currently assessing needs in Pakistan under a separate funding line, and the DFID India office is providing financial support to disaster mitigation activities through a trust fund with the World Bank.

We are also interested to support regional initiatives where they are seen to add value, and are keeping a close watch on developments within the ISDR-IOC led process, and the UNESCAP trust fund. DFID is strongly committed to the Paris Declaration on Aid Effectiveness, which emphasizes country ownership, alignment of international aid to country objectives and systems, and harmonisation of donor initiatives. We are therefore very happy to support this programme coordination effort by the USAID IOTWS team.

We apologize for not being able to field any of our officers to this event for most of the duration of the meeting. We would be grateful if the above could be shared with participants to inform the session on 'donor coordination opportunities' and 'mechanisms for coordination,' and are looking forward to learn about the directions of travel the assembled stakeholders will have identified as important, in the last session of the event.

Yvan Biot and Nigel Adams,
Asia Directorate and Conflict, Humanitarian Assistance and Security
DFID London

V. IDENTIFYING ADDITIONAL COORDINATION MECHANISMS (FACILITATED DISCUSSION)

Participants identified several mechanisms that can be used to increase coordination among partners regarding tsunami-warning system related activities, including (1) participation in the proposed ICG/IOTWS Working Group 6 that was recommended in Hyderabad, India, to provide greater focus on national and local preparedness and response; (2) use of the DADs that have been developed by the UNDP to track project-level tsunami recovery activities in Sri Lanka, Thailand, Aceh (Indonesia), the Maldives, and soon at a regional level and for private sector activities; and (3) continued networking and sharing of information at related meetings and workshops.

JANUARY 31, 2006

VI. BREAKOUT SESSIONS

The second day of the workshop was devoted to small group discussions in breakout sessions to focus on specific components of the end-to-end system. Participants were first asked to complete project activity sheets that highlight current projects, participating organizations, project duration, funding levels, and location of the activities. A compilation of these project activity sheets is provided in Annex C. Participants then shared information on these projects with the group and began identifying challenges to implementation, needs for successful implementation, opportunities for coordination, and specific action items and schedules to address these issues.

Several common themes were expressed in each of the breakout sessions. Participants stated that donor activities should be conducted within the context of achieving overall sustainability and stressed that organizations should partner with well-established institutions such as the IOC, WMO, UNDP, International Strategy for Disaster Reduction (UN/ISDR), ADPC, and others. In addition, private sector support is needed to help address long-term needs. Specific activities and opportunities for coordination for each breakout session are provided below.

Breakout Session 1: National Warning Center and Disaster Management Capacity Building

Summary of Key Activities

Participants introduced themselves and then summarized their organizations' key activities that relate to national warning center and disaster management capacity building.

UNDP Regional Program on Capacity Building for Sustainable Recovery and Risk Reduction in Tsunami-Affected Countries. Contact: Mr. Pablo Torrealba, UNDP/Bureau for Crisis Prevention and Recovery (BCPR). UNDP has initiated a one-year program with funding from Norway to support early warning system activities in Indonesia, Sri Lanka, Thailand, India, and the Maldives. Specific activities include hazard mapping, communication systems, multi-hazard risk assessments, information management, and institutional and legal framework review for recovery and risk reduction strengthening.

UNESCO Capacity Building for Disaster Management. Contact: Mr. Michael Rottmann, UNESCO Jakarta. UNESCO received USD\$300,000 from UNDP to train scientists and technicians on the upgraded tsunami early warning system. BMG (the Meteorological and Geophysical Agency of Indonesia) staff are being sent to Germany, Japan and the ITIC in Hawaii. In addition, the German

Development Agency, GTZ, is organizing a study tour and workshops in Indonesia to assist BAKORNAS staff in preparedness, awareness, and training for disaster management.

UNESCAP Regional Tsunami Trust Fund. Contact: Mr. Khalid Husain, UNESCAP. UNESCAP is administering the Regional Tsunami Multi-Donor Voluntary Trust Fund that consists of funding from the Governments of Thailand and Sweden. The trust fund currently has USD\$12.5 million and will support two- or three-year activities. The major activities include funding organizations in the Indian Ocean region to build capacity for an early warning system. As part of the pre-project activities UNESCAP has conducted a stakeholder consultation needs assessment and mapping, and a regional seminar.

US IOTWS Program—Incident Command System (ICS). Contact: Ms. Trudie Mahoney, USDA/FS. The US IOTWS Program is working with the government of Sri Lanka to incorporate ICS into their national disaster preparedness framework. ICS is a standardized emergency management system designed that allows governments to respond quickly to emergency situations. ICS refers to the creation of an integrated organizational structure that is designed to directly correspond to the complexity and demands of any size or type of emergency incident.

US IOTWS Program—Seismic Network Upgrades and Training. Contact: Mr. Shane Detweiler, USGS. The US IOTWS Program is working with selected countries to upgrade their seismic instruments and data processing capabilities. For example, USGS has signed an agreement with Cal Tech to install and upgrade SuGAR network stations in Indonesia, which will provide data within minutes of an event. USGS is also helping to increase the capacity of Indian Ocean countries in collecting, interpreting, and disseminating seismic data through intensive training. The training is scheduled for Indonesia, Sri Lanka, Thailand, India, and the Maldives.

World Meteorological Organization (WMO). Contact: Dr. Maryam Golnaraghi, WMO. The WMO provides the meteorological information on which warnings are based, as well as conducting training to effectively interpret the data. As part of WMO's implementation plan in natural disaster prevention, the WMO conducted regional surveys to assess capacities/gaps/needs for hydro-meteorological services in support of disaster risk reduction. The results of the surveys should be available by the summer 2006. The WMO is also supporting the GTS upgrades in various Indian Ocean countries. They are conducting a needs assessment and then will procure the equipment and conduct training. The WMO, in conjunction with the IOC and ISDR, will conduct training for the meteorological services and disaster management organizations to enhance multi-hazard alert and response mechanisms in the Indian Ocean to support tsunami early warning systems.

Discussion and Recommendations

Challenges to Successful Implementation

- There is very limited technical knowledge in some of the IO countries for operating a warning center.
- Many of the staff in the meteorological departments have multiple responsibilities and resources are stretched very thin.
- Many organizations are conducting focused needs assessments, but the information is not necessarily being shared.

Needs for Successful Implementation

- Everything that is done to address capacity building for national warning center and disaster mangement needs to be done in an all-hazards context.
- A consistent, regularly updated training curricula is needed to build capacity over the long term.
- Coordinated training opportunities should be identified to maximize limited resources and minimize the number of trainings an individual would have to take.
- A consistent set of skills, policies, and procedures are needed within each of the IO region countries to operate a warning center.

Opportunities for Coordination

- The US IOTWS Program Integrator (PI) will help coordinate/consolidate tsunami-related training materials and facilitate discussions on the possibility of developing a virtual training center. Organizations with potential training resources include the IOC, WMO, NOAA, USGS, UNDP, and ADPC.
- USGS will coordinate with UNESCO's Capacity Building for Disaster Management activities on upcoming USGS seismic training for Indonesia.
- UNDP will coordinate their review of multi-hazard risk assessment with ICG Working Group efforts to develop methodologies and best practices. UNDP will provide the risk profile just completed for the Maldives.
- WMO will complete their multi-hazard survey of 186 countries in June 2006. WMO will provide this information to the UNESCAP Regional Tsunami Trust Fund to help target funding needs.

Breakout Session 2: National and Local Warning Communications Systems

Summary of Key Activities

Participants introduced themselves and then summarized their organizations' key activities that relate to national and local warning communications systems.

Disaster Tracking Recovery Assistance Center (D-TRAC). Contact: Ms. Sandra Schimmelpfennig, D-TRAC. D-TRAC developed a web site providing details on the status of and progress made in tsunami relief activities. It includes detailed reports from 27 aid organizations helping in the relief phase as well as maps, village names, and a list of requests for assistance from a variety of aid organizations involved in the tsunami recovery. D-TRAC is an overall initiative launched in partnership with the Office of Representative Krit SriFa of the Royal Thai Parliament and the District Office of Khuraburi. D-TRAC aims at coordinating and harmonizing relief action through the establishment of an effective system for the collection, organization, and easy access to relevant information and data on overall tsunami relief related activities in the Phang Nga province.

UN International Telecommunication Union (ITU). Contact: Mr. Wisit Atipayakoon, ITU. The ITU has set up national emergency communication teams in some countries and has developed an action plan in Bangladesh and Sri Lanka (March 2006). The ITU is also working in the Maldives and is planning to convene a regional workgroup of government telecommunications regulatory agencies in June to discuss telecommunications in a disaster management context. The ITU is also planning to conduct a workshop to present assessment and recommendations for improving emergency communications.

UNESCAP. Contact: Mr. David Hastings, UNESCAP. UNESCAP's overarching activities include improving regional cooperation for disaster management. UNESCAP develops standard operating

procedures for various aspects of disaster management. UNESCAP is planning a regional workshop on disaster management communications.

UNESCAP/Intergovernmental Oceanographic Commission (IOC). Contact: Dr. Laura Kong, ITIC. The IOC facilitates the convening of national interagency groups to address national alert system issues. The training of trainers (TOT) tool is under development for the Meteorological Service (target April) and media focal points—which will provide resource kits (Tsunami Teacher) that can be customized—standard operating procedures, checklists, and so on. Funds are needed at the national level to disseminate information to communities. In addition, the IOC ensures standards in communications and evaluations of tsunami threat and can propagate best management practices that emerge from short-term initiatives.

US IOTWS Program—Improved Communications Technology. Contact: Mr. Curt Barrett, NOAA. The US IOTWS Program is working with various UN organizations such as the IOC and the WMO to upgrade communications technology throughout the Indian Ocean region. These activities include upgrading the GTS in Sri Lanka and the Maldives; implementing RANET, a last-mile communications system, in Indonesia, Sri Lanka, and the Maldives; and upgrading and establishing a WAN in Thailand.

US IOTWS Program—Tsunami Alert Rapid Notification System (TARNS). Contact: Ms. Deanne Shulman, USDA/FS. The US IOTWS Program is working with the Thai NDWC to incorporate TARNS into their disaster communication system. TARNS is composed of a system design and plan including required training for personnel, SOPs, checklists, and testing protocols. It also identifies the technology and hardware needed for disseminating warnings and includes a plan to conduct routine tests and evaluate the total system on regular basis.

U.S. Trade and Development Agency (USTDA)/PDC. Contact: Dr. Allen Clark, PDC. The PDC, through a grant issued by USTDA through the Thai NDWC, is helping to develop NDWC's information and communications backbone system for early warning. As part of this project, PDC is developing a Concept of Operations for decision support, which includes GIS and modeling capabilities to formulate and disseminate a warning.

Pacific Disaster Center. Contact: Dr. Allen Clark, PDC. Through a grant funded directly by the Thai government, PDC provides support for development of simulation exercises, GIS and other software decision support tools within NDWC.

Discussion and Recommendations

Challenges to Successful Implementation

- There is inertia within government agencies that make it difficult to embrace change.
- The independence and competition for funds among agencies prevent an atmosphere of cooperation.
- There is a lack of coordination within governments.
- There is a lack of technical capacity and standardization.
- There is a gap between coordination at national level and local levels (talking before action vs. action before talking)
- There are no models for disaster preparedness “best management practices” for communications.

- There is a lack of ability of IO/regional initiatives/donor countries/national governments to link with NGO initiatives at community levels.
- The lifespan of all tsunami warning programs are very short and, therefore, diminish the ability to create sustainable initiatives.
- There are typically short attention spans among communities regarding disaster issues so that it will be difficult to keep them focused on long-term activities.

Needs for Successful Implementation

- Technology systems between levels of government need to be compatible.
- Human resource capacity within agencies responsible for alert dissemination needs to be developed.
- Stakeholder involvement must be encouraged at all levels (i.e., the consistency of players, resolving the power imbalance, insuring all stakeholders are represented, and identifying ALL stakeholders)
- Development of an end-to-end system
- Sustainability of systems including trained people and maintenance of equipment need to be addressed, not just meeting funding needs.
- The system needs to address all hazards.
- The local community needs to understand the technology and system because it will be sustained by these people.
- Priorities and budgets need to be established.
- There needs to be greater emphasis on people-to-people activities to help achieve sustainability.
- A regulatory framework for telecommunications needs to be established.
- Delineation of responsibilities, accountability, transparency, and a mandate among national agencies needs to be formed.

Opportunities for Coordination

- The US IOTWS Program team will jointly work to leverage resources at the regional level and share workplans with interested partners.
- The International Telecommunication Union (ITU) is holding a regional workshop on protocols (target audience is telecom regulators) and the US IOTWS Program will contact USTDA and ITU to get more information on the telecommunications projects in the region.
- UNESCAP suggested a regional workshop on disaster warning communication to address everything relating to satellites, data processing, and response communications. UNESCAP offered the United Nations meeting facility space in Bangkok and recommended videoconferencing.
- The IOC has offered to help facilitate coordination as part of its international role.

Breakout Session 3: Coastal Community Resilience and Hazard Analysis

Summary of Key Activities

Participants introduced themselves and then summarized their organizations' key activities that relate to coastal community resilience and hazard analysis.

Asian Disaster Reduction Center (ADRC). Contact: Mr. Akihiro Teranishi, ADRC. ADRC was established in 1997 and is composed of 25 member countries. ADRC is preparing school education curricula in Sri Lanka funded by USAID.

Coordinating Committee for Geoscience Programmes in East and Southeast Asia (CCOP).

Contact: Mr. Chen Shick Pei, CCOP. CCOP is an intergovernmental organization for geosciences and coastal zone management in East and Southeast Asia established in 1966. CCOP has developed detailed action areas for geosciences: risk assessment and forward planning, risk mitigation, and coastal rehabilitation. CCOP is also working on a Tsunami Risk Reduction Measures project to focus on land use and plan to hold a workshop in Bangkok in March 2006.

Disaster Tracking Recovery Assistance Center (D-TRAC). Contact: Ms. Sandra

Schimmelpfennig, D-TRAC. D-TRAC developed a web site providing details on the status of and progress made in tsunami relief activities. It includes detailed reports from 27 aid organizations helping in the relief phase as well as maps, village names and a list of requests for assistance from a variety of aid organizations involved in the Tsunami recovery. Post-tsunami, one third of aid organizations in the region are entirely new, and 23 of the startup agencies have folded.

GTZ. Contact: Mr. Eberhard Blanke, GTZ. The GTZ is an international cooperation enterprise for sustainable development working through the German government. In 2002, GTZ and ADPC worked with the Thai government to develop a Department of Disaster Prevention and Mitigation. GTZ is also conducting long-term work with the Ministry of Environment in Indonesia.

Subregional Development Plan for the Tsunami-Affected Andaman Region. Contact: Mr.

Kittipun Poonjumnern, Wilbur Smith Associates in association with TESCO; and Pieter de Jong, URS corporation. This is a 12-month project funded by the Asian Development Bank (ADB) and the Thai Financial Ministry. The focus of the project is to incorporate risk management into planning projects in three of the six most affected provinces. The project is working through the Thai ministry of finance. The focus is on the creation of a subregional development plan over 10-20 year time frame that mainly addresses economic sectors such as tourism, agriculture, and fishing.

UNESCAP. Contact: Lorenzo Santucci, UNESCAP. UNESCAP granted money for a tsunami trust fund containing USD\$10 million plus USD\$2.5 million to facilitate the development of a Southeast Asia early warning system. UNESCAP is still discussing modalities and the scope of the effort. UNESCAP has projects in Sri Lanka and Korea. UNESCAP is working on three to four post-tsunami projects in Sri Lanka that involve disaster preparedness and livelihoods. In Sri Lanka, UNESCAP is conducting a project that will link two communities to the national disaster preparedness system.

UN/International Strategy for Disaster Reduction (UN/ISDR). Contact: Mr. Joseph Chung, ISDR. ISDR has a meeting planned in May to discuss and mainstream the issue of community-based disaster preparedness and discuss how to make disaster preparedness routine. ISDR is participating in the development of community-based response plans that are being developed in many countries.

US IOTWS Program—Coastal Community Resiliency (CCR) Program. Contact: Mr. Russell

Jackson, NOAA. The US IOTWS Program will work with partners in the region to develop a CCR Program. The resilience program will address all hazards and different types of communities such as resort areas, small villages, and municipalities. As part of the CCR Program, benchmarks for self-assessment of a resilient coastal community will be developed to help local governments and communities determine what exists and what needs to be done. Issues to be addressed include evacuation plans, mitigation measures, construction standards, means to protect natural resources, mangroves or reefs to protect shoreline against coastal erosion, and storm surges.

USAID/Office of Foreign Disaster Assistance (OFDA). Contact: Mr. Robert Barton, OFDA. OFDA has long worked with ADPC as a long-term partner in the region. OFDA is working to build resilience at the community level in Sri Lanka with ADPC by instituting basic early warning plans and systems, loudspeakers and text messages, and conducting hazard mapping using historical flooding data.

Discussion and Recommendations

Challenges to Successful Implementation

- A big challenge is how to make these activities sustainable over the long term. Funding is available for first few years, but how can we make it sustainable?
- Community preparedness activities are being done only on pilot project basis. We are not addressing all communities but instead prioritizing just a few of them.

Needs for Successful Implementation

- Good information about hazard risks is needed (e.g. hazard mapping and inundation modeling). There isn't detailed flood mapping or storm surge modeling data available. Recommend conducting a workshop on hazard mapping at the community level.
- Interagency coordination and information sharing needs to be increased.
- There is a need for mapping of community-based disaster risk management (CBDRM) activities in each country.
- Community-based disaster risk-based management needs to be integrated with temples and mosques.
- We need to integrate tsunami into disaster management preparedness response plans that exist for other hazards, given the short lead time for tsunamis.
- We need to build the capacities of governments and institutions for local preparedness and response and risk analysis (hazard assessment and vulnerable area assessment).

Opportunities for Coordination

- The PI and NOAA will work with partners in the region to develop a CCR Program.
- The PI and its partners will develop benchmarks for self-assessment of a resilient coastal community to assist local governments and communities to determine what currently exists and what components need to be added.
- The PI will coordinate with UNESCAP on its disaster preparedness activities in Sri Lanka, which will link two communities to the national disaster preparedness system.

Breakout Session 4: Coastal Disaster Mitigation Policies and Practices

Summary of Key Activities

Participants introduced themselves and then summarized their organizations' key activities that relate to coastal disaster mitigation policies and practices.

Asian Disaster Preparedness Center (ADPC). Contact: Ms. Lolita Bildan. ADPC is conducting a program for hydro-meteorological disaster mitigation in secondary cities in Sri Lanka (funded by USAID/OFDA implemented in Kulutara for 2 years), conducting capacity building activities for tsunami-affected areas in Thailand funded by UNDP, and providing technical assistance to the Disaster Management Center (DMC) in Sri Lanka through UNDP for developing a road map for a "Safer Sri Lanka."

Coordination Committee for Geoscience Programmes in East and Southeast Asia (CCOP). Contact: Mr. Young Soo Park, CCOP. CCOP is conducting a tsunami risk assessment project focusing on land-use planning and rehabilitation (funded by the Norwegian Geotechnical Institute).

Subregional Development Plan for the Tsunami-Affected Andaman Region. Contact: Mr. Kittipun Poonjumnern, Wilbur Smith Associates in association with TESCO. This is a 12-month project funded by the ADB and the Thai Ministry of Finance. The project is focusing on hazard mitigation, regional planning, land use, environment, architecture, GIS, policies, and legal process.

World Wildlife Fund (WWF) Contact: Angie Woo, WWF. The WWF is involved in several programs that address coastal management. The Green Coast project is a regional project that promotes economic and ecological recovery (funded by Oxfam Netherlands). For the Had Tay Muang National Park Project in Phang-na Province, Thailand, WWF is serving on the national park management board, providing local outreach and awareness, and developing conservation action plans (funded by WWF Italy and Sweden, and the United Nations Environmental Program). WWF is collaborating with the American Red Cross (ARC) and others including World Vision, to reduce future community economic and ecological vulnerability (e.g., green construction guidelines).

Discussion and Recommendations

Challenges to Successful Implementation

- The weakness of local governments in Thailand hamper the development of coastal resilient communities.

Needs for Successful Implementation

- Institutes are needed that are willing to take on the program.
- There needs to be greater collaboration among existing programs.
- Legal frameworks need to be strengthened to help administer the programs.
- Capacity building of local governments and communities need to be strengthened to deal with coastal mitigation.
- Links between research institutes and government entities need to be strengthened.
- There needs to be greater involvement of the tourism sector.

Opportunities for Coordination

- PI and NOAA will visit the CCOP to coordinate geosciences data for hazard mapping with US IOTWS Program.
- PI and NOAA will work with WWF to discuss green reconstruction guidelines.
- PI will meet with the ADB-supported team in Thailand to explore potential collaboration opportunities with the US IOTWS Program.
- PI and ADPC will explore potential joint sites in Sri Lanka for coastal mitigation.

Breakout Session Report Outs and Open Discussion

Participants reconvened from the breakout sessions to present their findings to the entire audience. The team leader from each breakout session presented an overview of their session and highlighted the needs, challenges, and opportunities for coordination that are outlined above.

Many participants reiterated comments made in the breakout sessions. These comments included the importance to use an all-hazards approach, the need to build the capacity of various disaster management organizations through training, and to make a concerted effort to coordinate with other partners when working on IOTWS activities to help reduce duplication of efforts, and to strengthen the long-term sustainability of the IOTWS for the region.

Mr. Anastasia thanked all of the participants for their comments and recommendations and said that he hoped that this meeting helped to forge stronger relationships and enhance coordination opportunities in the region. For a complete set of workshop presentations go to www.us-iotws.gov under Trainings and Workshops.

Annex A: Workshop Participants

Mr. Orestes Anastasia

Program Manager, US IOTWS Program
USAID/Regional Development Mission/Asia
Diethelm Tower A., 10th Floor,
Wireless Road, Bangkok, THAILAND
Tel: +66 (0)2263-7468
Fax: +66(0)2263-7499
[oanastasia@usaid.gov](mailto: oanastasia@usaid.gov)

Mr. N.M.S.I. Arambepola

Director of Urban Disaster Risk Management
(UDRM) and
Program Manager of the Program for Hydro-
Meteorological Disaster Mitigation in Secondary
Cities in Asia (PROMISE)
Asian Disaster Preparedness Center
P.O. Box 4 Klong Luang, Pathumthani 12120
THAILAND
Tel: +66(0) 22516 5900 ext 401
Fax: +66(0) 2524 5350
[arabepola@adpc.net](mailto: arabepola@adpc.net)

Mr. Wisit Atipayakoon

Specialist in Telecommunication Infrastructure
Development
Telecommunication Development Bureau (BDT)
ITU Regional Office for Asia and the Pacific
89/2 Chaengwattana Road,
Laksi, Bangkok 10210 THAILAND
Tel: +66(0)2574 8565, 574 9326
Fax: +66(0)2574 9382
[wisit.atipayakoon@itu.int](mailto: wisit.atipayakoon@itu.int)

Dr. Curt Barrett

Hydrometeorological Project Manager
National Weather Service
National Oceanic and Atmospheric Administration
1325 East West Highway
Silver Spring, M.D. 20910 USA
Tel: +1(301)713-1784 ext 136
Fax: +1(301)587-4524
[curt.barrett@noaa.gov](mailto: curt.barrett@noaa.gov)

Dr. Amrit Bart

Associate Professor & Chief of Party
Coastal Livelihoods Program
Asian Institute of Technology
P.O. Box 4 Klong Luang
Pathumthani 12120 THAILAND
Tel: +66 (0) 25245473 Fax: +66(0)25246200
[bart@ait.ac.th](mailto: bart@ait.ac.th)

Mr. Robert Barton

Office of Foreign Disaster Assistance
USAID/Regional Development Mission/Asia
Diethelm Tower A., 10th Floor,
Wireless Rd., Bangkok, THAILAND
Tel: +66 (0) 2263-7459
[rbarton@usaid.gov](mailto: rbarton@usaid.gov)

Mr. Tim Beans

Mission Director USAID/Regional Development
Mission/Asia
Diethelm Tower A., 10th Floor
Wireless Rd., Bangkok, THAILAND
Tel: +66 (0)2263-7478
Fax: +66(0) 2263-7494
[tbeans@usaid.gov](mailto: tbeans@usaid.gov)

Ms. Lolita Bildan

Program Integrator/ADPC
Asian Disaster Preparedness Center
P.O. Box 4, Klong Luang
Pathumthani 12120, THAILAND
Tel: +66 (0) 2516 5900-10
Fax: +66(0) 2524 5350
[lolita@adpc.net](mailto: lolita@adpc.net)

Mr. Eberhard Blanke

Consultant
GTZ
16th Floor, Rajada Office Complex
193/63 New Ratchadapisek Road
Klong Toey, Prakhnong
Bangkok 10110 THAILAND
Tel: ++66 (0) 2661 9273
Fax: ++66 (0) 2661 9282

Mr. Winston Bowman

Regional Environmental Director USAID/Regional
Development Mission/Asia
Diethelm Tower A., 10th Floor,
Wireless Rd., Bangkok, THAILAND
Tel: +66 (0)2263-7469
Fax: +66(0)2263-7499
wbowman@usaid.gov

Ms. Sutthiya Chantawaragul

Program Officer
European Union
Kian Gwan House II,
19th Floor 140/1 Wireless Road
Bangkok, THAILAND
Tel: +66(0) 2 305 2600
Fax: +66(0) 2 255 9113
sutthiya.chantawaragul.cec.eu.int

Mr. Joseph Chung

Senior Regional Officer
UN ISDR/Bangkok
c/o UNESCAP, UN Conference Center Building,
Rajdamnern Avenue
Bangkok 10200 THAILAND
Tel: +66 (0) 2288 2750
Mobile: 66 (0) 1753-6132
chung2@un.org

Dr. Allen L. Clark

Executive Director
Pacific Disaster Center
590 Lipoa Pkwy, Suite #259
Kihei, Hawaii 96753 U.S.A
Tel: +1(808) 891-0525
Fax: +1(888) 808-6688
aclark@pdc.org

Mr. Peter F. Collier

Regional Training Specialist
United Nations Development Programme
United Nations Service Building,
4th Floor Rajdamnern Nok Avenue
Bangkok 10200, THAILAND
GPO Box 618 Bangkok 10501, THAILAND
Tel: +66 (0)2288 2674
Fax: +66(0)2280 0556
Peter.collier@undp.org

Dr. Kitty Courtney

Program Integrator/IRG-Tetra Tech
Tetra Tech EM Inc.
2828 Paa Street Suite 308
Honolulu, Hawaii 96819 USA
Tel: +1(808) 441-6612
Fax: +1(808) 382-6927
kitty.courtney@ttemi.com

Mr. Aidan Cox

Regional Advisor
United Nations Development Programme
United Nations Service Building
1st Floor Rajdamnern Nok Avenue, Bangkok 10200
GPO Box 618, Bangkok 10500 THAILAND
Tel: +66(0) 2288 2735
Fax: +66(0) 2280 0556
aidan.cox@undp.org

Mr. Shane T. Detweiler

Geophysicist
US Geological Survey
345 Middlefield Road, MS 977
Menlo Park, CA 94025 USA
Tel: +1(650)329-5192
Fax: +1(650) 329-5163
shane@usgs.gov

Dr. William Erb

Head, Intergovernmental Oceanographic
Commission
Perth Regional Programme Office and
Intergovernmental Coordination Group for Indian
Ocean Tsunami Warning and Mitigation System
(ICG/IOTWS)
c/o Bureau of Meteorology
P.O. Box 1370, West Perth
WA 6872 AUSTRALIA
Tel: +1(618) 9226 2899
Fax: +1(618) 9226 0599
w.erb@bom.gov.au

Mr. SHM Fakhruddin

Technical Specialist
Program Integrator/ADPC
Chartered Square Building – 18th Floor
152 North Sathorn Road, Bangrak
Bangkok 10500, THAILAND
Tel: +66(0)2 637 8517-19
Fax: +66(0)2 637-8520
fakhruddin@adpc.net

Dr. Martin Godao

Senior Consultant
GTZ
16th Floor, Lake Rajada Office Complex
193/63 New Ratchadapisek Road
Klong Toey, Prakhonong
Bangkok 10110 THAILAND
Tel: ++66 (0) 2661 9273
Fax: ++66 (0) 2661 9282
mgodau@web.de

Dr. Maryam Golnarahi

Chief
Natural Disaster Prevention and Mitigation
Programme
World Meteorological Organization
7 bis, avenue de la Paix
Case Postale 2300
CH 1211 Geneva 2 SWITZERLAND
Tel: +41 (0) 22 730 8006
Fax: +41 (0) 22 730 8023
mgolnaraghi@wmo.int

Mr. Marc Gordon

Technical Assistant
DIPECHO South East Asia
4th Floor, Indosuez House,
152 Wireless Road, Lumpini
Pathumwan, Bangkok 10330 THAILAND
Tel: +66(0)2255 1035/6 or 2651 4091/2
or 66(0) 9896 1564
Fax: +66(0)2255 1034
ta02@echo-bangkok.org

Mr. David A. Hasting

Geographic Information Systems Officer
Space Technology Applications Section
Information, Communication and Space Technology
Division, UNESCAP
United Nations Building
Rajadamnern Nok Avenue
Bangkok 10200 THAILAND
Tel: +66(0) 2288 1457
Fax: +66(0) 2288-3012
hastingsd@un.org

Ms. Kathryn Hoeflich

Program Integrator/Small Grants Manager
International Resource Group
1211 Connecticut Ave.
NW, Suite 700
Washington, DC 20036 USA
Tel: +1202-289-0100
Fax: +1202-289-7601
khoeflich@irglt.com

Mr. Khalid Husain

Programme Officer
Programme Management Division
UNESCAP
United Nations Building
Rajadamnern Nok Avenue
Bangkok 10200 THAILAND
Tel: +66(0)2288 1948
Fax: +66(0)2288 3035
husain@un.org

Mr. Russell Jackson

Pacific Services Center
National Oceanic and Atmospheric Administration
737 Bishop Street
Pacific Guardian Center
Mauka Tower, Suite 2250
Honolulu, Hawaii 96813 USA
Tel: +1(808)522-2299
Fax: +1(808)532-3224
russell.jackson@noaa.gov

Mr. Sanny Ramos Jegillos

Regional Programme Coordinator
United Nations Development Programme
UNDP Regional Centre in Bangkok
4th Floor, UN Service Building
Rajdamnern Nok Avenue,
Bangkok 10200, THAILAND
Tel: +66 (0)5145 2246
Fax: +66(0)22882536
sanny.jegillos@undp.org

Mr. Pieter de Jong

Environmental Planning Consultant
20700 Westerly Road
Poolesville, MD 20837 USA
Cell Phone: 1-(301)518-3451
Home Office Phone 1-(301)349-0169
pieter_dejong@urscorp.com

Mr. Earl Kessler

Deputy Director
Office of Executive Director
Asian Disaster Preparedness Centre
P.O. Box 4, Klong Luang
Pathumthani 12120 THAILAND
Tel: +66 (0) 2516-5900 ext 325
Fax: +66(0) 2524 5350
ekessler@adpc.net

Ms. Kultida Khumpradid

Administrative Assistant
Program Integrator/IRG-Tetra Tech
Chartered Square Building – 18th Floor
152 North Sathon Road, Bangrak
Bangkok 10500, THAILAND
Tel: +66(0)2 637 8517-19
Fax: +66(0)2 637 8520
K_khumpradid@yahoo.co.th

Mr. Daniel Kirkwood

Aid Coordination Officer
United Nations Development Programme
12th Floor, United Nations Building
Rajdamnern Avenue, Bangkok 10200 THAILAND
GPO Box 618 Bangkok 10501 THAILAND
Tel: +66(0) 2288 1737
Fax: +66(0) 2280 0556
daniel.kirkwood@undp.org

Dr. Laura Kong

Director
UNESCO IOC International Tsunami Information
Centre
737 Bishop St., Ste. 2200
Honolulu, Hawaii 96813 USA
Tel: +1(808)532-6422
Fax: +1(808) 532-5576
l.kong@unesco.org

Ms. Parichatt Krongkant

Training and Project Management Specialist
Program Integrator/IRG-Tetra Tech
Chartered Square Building – 18th Floor
152 North Sathon Road, Bangrak
Bangkok 10500, THAILAND
Tel: +66(0)2 637 8517-19
Fax: +66(0)2 637 8520
pkrongkant@yahoo.com

Ms. Chantalle Lacroix

Field Staff, Coordinator and Public Relations
Disaster Tracking Recovery Assistance Center (D-
TRAC)
56/73-74 Petchkasem Road, Village 5
Bang Niang, Khuk Khak Subdistrict
Takua Pa District, Phang Nga Province
THAILAND
Tel: +66(0) 76 420 808
Mobile: 66(0) 7885 2195
chantalle.l@d-rac.org

Ms. Elizabeth Leff

Regional Tsunami Private Sector Coordinator
United Nations Development Programme
United Nations Service Building
1st Floor Rajdamnern Nok Avenue, Bangkok 10200
GPO Box 618, Bangkok 10500 THAILAND
Tel: +66(0) 2288 2704
Fax: +66(0) 2280 0556
Mobile: 66(0)4751 3873

Ms. Jennifer Lewis

National Weather Service
National Oceanic and Atmospheric Administration
1325 East West Highway
Silver Spring, MD 20910 USA
Tel: +1(301)713-0645 x109
Fax: +1(301)587-4524
Jennifer.lewis@noaa.gov

Ms. Charlie MacPherson

Program Integrator/IRG-Tetra Tech
Tetra Tech, Inc.
10306 Eaton Place, Suite 340
Fairfax, VA 22030 USA
Tel: +1(703) 385-6000
Fax: +1(703) 385-6007
charlie.macpherson@tetrattech-ffx.com

Ms. Trudie Mahoney

U.S. Department of Agriculture, Forest Service
Region 5 Monitoring Council
1323 Club Drive
Vallejo, CA 94592 USA
Tel: +1(707) 562 9184
Fax: +1(707) 562 9064
tmahoney@fs.fed.us

Mr. David McKinnie

IOTWS Project Coordinator
Pacific Marine Environmental Laboratory
National Oceanic and Atmospheric Administration
7600 Sand Point Way NE
Seattle, Washington 98115 USA
Tel: +1(206)526-6950
Fax: +1(206)526-4576
david.mckinnie@noaa.gov

Mr. Jorg Nadoll

Programme Specialist – Aid Coordination and
Management
3rd Floor, UN Service Building
Rajdamnern Nok Avenue,
Bangkok 10200, THAILAND
Tel: +66 (0) 2288 2708
Fax: +66(0) 2280-0556
Jorg.nadoll@undp.org

Mr. Amin Pakzad

Deputy Chief of Party
Program Integrator/IRG-Tetra Tech
Chartered Square Building – 18th Floor
152 North Sathorn Road, Bangrak
Bangkok 10500, THAILAND
Tel: +66(0)2 637 8517-19
Fax: +66(0)2 637 8520
amin.pakzad@ttemi.com

Dr. Young-Soo Park

Regional Expert
Coordinating Committee for Geoscience
Programmes in East and Southeast Asia (CCOP)
Thai CC Tower, 24th Floor, Suite 244-245
889 Sathorn Tai Road, Bangkok, THAILAND
Tel: +66 (0) 2672 3080 to 81
Fax: +66(0) 2672 3082
yspark@ccop.or.th

Mr. Chen Shick Pei

Director
Coordinating Committee for Geoscience
Programmes in East and Southeast Asia (CCOP)

Thai CC Tower, 24th Floor, Suite 244-245
889 Sathorn Tai Road Bangkok THAILAND
Tel: +66 (0) 2672 3080 to 81
Fax: +66(0) 2672 3082,
spchen@ccop.or.th

Mr. Robert Piper

Chief of Staff
Office of the Secretary-General's Special Envoy for
Tsunami Recovery, United Nations
One United Nations Plaza DC1-2106
New York, N.Y. 10017 USA
Tel: +1(212) 906 6005
Fax: +1(212) 906 3606
robert.piper@undp.org

Mr. Kittipun Poonjumnern

Hazard Mitigation Expert
Subregional Development Plan for the Tsunami
Affected Andaman Region
(Wilbur Smith Associates in association with
TESCO)
11th Floor, Phyathai Plaza Bldg.
128 Phyathai Road, Bangkok 10400 THAILAND
Tel: +66(0) 22160 2368
Mobile: 66(0) 832 2030
Fax: +66(0) 2216 0239
tesconet@csloxinfo.com or
tesco@tescoconsult.com

Mr. Teerasak Ratinukulkit

Web and Network Administrator
Program Integrator/IRG-Tetra Tech
Chartered Square Building – 18th Floor
152 North Sathorn Road, Bangrak
Bangkok 10500, THAILAND
Tel: +66(0)2 637 8517-19
Fax: +66(0)2 637 8520
teerasak@adpc.net

Mr. Michael Klaus Rottmann

Special Coordinator for Tsunami Early Warning
System
UNESCO Office, Jakarta
Regional Science Bureau for Asia and Pacific
Jl. Galuh II No. 5, Kebayoran Baru
Jakarta 12110, INDONESIA
Tel: +(62 -21) 739 9818 ext 870
Fax: +(62-21) 7279 6489
m.rottmann@unesco.org

Mr. Lorenzo Santucci

Associate Environment Affairs Officer
Water Resources Section
Environment and Sustainable Development Division,
UNESCAP
United Nations Building
Rajadamnern Nok Avenue
Bangkok 10200 THAILAND
Tel: +66(0)22881946
Fax: +66(0)22881059
santucci@un.org

Ms. Sandra Schimmelpfennig

Director
Disaster Tracking Recovery Assistance Center
(D-TRAC)
56/73-74 Petchkasem Road, Village 5
Bang Niang, Khuk Khak Subdistrict
Takua Pa District, Phang Nga Province
THAILAND
Tel: +66(0) 76 420 808
Mobile: 66(0) 5 212 4241
saundra.s@d-rac.org

Mr. Justin Shone

Aid Management Advisor and Project Manager-
Thailand
United Nations Development Programme
United Nations Service Building
12th Floor Rajdamnern Nok Avenue, Bangkok 10200
GPO Box 618, Bangkok 10500 THAILAND
Tel: +66 (0)1612 7771
justin.shone@undp.org

Ms. Deanne Shulman

Disaster Mitigation Programs, Office of International
Programs
U.S. Department of Agriculture, Forest Service
P.O. Box 3 Kernville, CA 93238 USA
Tel: +1(760) 376-6263
Fax: +1(760) 376-3142
dshulman@fs.fed.us or dshulman@hotmail.com

Mr. Stuart Sipkin

U.S. Geological Survey
MS 967, Box 25046, DFC
Denver, CO 80401 USA
Tel: +1(303) 273-8415
Fax: +1(303) 273-8450
sipkin@usgs.gov

Ms. Rachaneekorn Sriswasdi (Jiab)

Deputy Regional Manager
U.S. Trade and Development Agency, Asia Regional
Office
U.S. Embassy, Diethelm Tower A, 3rd Floor
93/1 Wireless Road
Bangkok 10330, THAILAND
Tel: +66 (0) 2205-5278
Fax: +66(0) 2255-4366
Rachaneekorn.sriswasdi@mail.doc.gov

Mr. Eric Stephan

Program Integrator/Knowledge Management
International Resource Group
1211 Connecticut Ave.
NW, Suite 700 USA
Washington, DC 20036 USA
Tel: +1202-289-0100
Fax: +1202-289-7601
estephan@irglttd.com

Mr. A.R. Subbiah

Program Integrator/ADPC
Asian Disaster Preparedness Center
P.O. Box 4, Klong Luang
Pathumthani 12120 THAILAND
Tel: +66 (0) 2516 5900-10 Ext. 405
Fax: +66(0) 2524 5350
subbiah@adpc.net

Ms. Eriko Tamura

Assistant Resident Representative
JICA THAILAND Office
1674/1 New Petchburi Road
Bangkok 10320 THAILAND
Tel: +66 (0) 2251-2391
Fax: +66(0) 2255-8086
tamura.eriko@jica.go.jp

Mr. Boon-Tiong Tay

Director, Finance
Asian Disaster Preparedness Centre
P.O. Box 4, Klong Luang
Pathumthani 12120 THAILAND
Tel: +66 (0)2516 5900-10 ext 201
Fax: +66(0)2524 5350
boontiong@adpc.net

Mr. Akihiro Teranishi

Senior Researcher
Asian Disaster Reduction Center
Hitomiraikan 5F
1-5-2 Wakinohamakaigan-dori
Chuoku, Kobe 651-0073
JAPAN

Tel: +81-78-262-5540
Fax: +81-79-262-5546
teranishi@adrc.or.jp

Mr. Le Huu Ti

Economic Affairs Officer
Water Resources Section
Environment and Sustainable Development Division,
UNESCAP
United Nations Building
Rajadamnern Nok Avenue
Bangkok 10200 THAILAND
Tel: +66(0)22881450 Fax: +66(0)22881059
ti.unescap@un.org

Mr. Pablo Torrealba

Regional Risk Reduction Specialist
Capacity Building for Sustainable Recovery and Risk
Reduction
United Nations Development Programme
4th Floor, United Nations Service Building
Rajadamnern Nok Avenue,
Bangkok 10200, THAILAND
Tel: +66 (0) 2288 2674
Fax: +66(0) 2280-0556
pablo.torrealba@undp.org

Mr. Wayne Ulrich

Regional Coordinator Emergencies
CARE
8th Floor Na-Nakorn Bldg.
99/349 Chaengwatthana Rd.,
Thungsonghong, Laksi, Bangkok THAILAND
Tel: +66(0)2576 1552
wulrich@care.org

Dr. Albert Sabroe Welinder

Chief Coordinator (Environment)
Asia Department
Royal Danish Ministry of Foreign Affairs
Asiatisk Plads 2, 1448 Copenhagen K
DENMARK
Tel: ++45 3392 0961
albwel@um.dk

Dr. Alan White

Chief of Party
Program Integrator/IRG-Tetra Tech
Chartered Square Building – 18th Floor
152 North Sathorn Road, Bangkok
Bangkok 10500, THAILAND
Tel: +66(0)2 637 8517-19 ext 20
Fax: +66(0)2 637 8520
alan.white@ttemi.com

Ms. Angie Woo

Coordinator, GMS Initiative
WWF International
Thailand Program
104 Outreach Building AIT
Paholyothin Road, Klong Luang
Pathumthani 12120 THAILAND
Tel: +66 (0) 2524 6128-9 ext 108
Mobile: 66(0) 7124 0852
Fax: +66(0) 2524 6168-9
angie@wwfthai.org

Mr. Wu Guo-Xiang

Chief of the Space Technology Application Section
Information, Communication and Space Technology
United Nations Building
Rajadamnern Nok Avenue
Bangkok 10200 THAILAND
Tel: +66(0) 2288 1456
Fax: +66(0) 2288 3012
wugu@un.org

ANNEX B: Workshop Agenda

Agenda Second U.S. Indian Ocean Tsunami Warning System (IOTWS) Program Coordination Workshop

January 30-31, 2006

**The Conrad Hotel
Bangkok, Thailand**

Monday, January 30, 2006

- 12:30-1:30 **Lunch**
Welcome, Tim Beans, USAID Regional Mission Director
- 1:30-3:00 **U.S. IOTWS Program Implementation Activity Updates/Issues**
U.S. Government team members present status reports on national and local-level 'downstream' activities to date in context of international IOTWS efforts (USAID, NOAA, USGS, USDA/FS, USTDA, and Program Integrator team)
- 3:00-3:15 **Break**
- 3:15-5:15 **Donor Coordination Opportunities and Mechanisms for Coordination**
Presentations that highlight collaboration mechanisms, opportunities, and experiences
- Mr. Robert Piper, Chief of Staff, Office of Special Envoy for Tsunami Recovery*
The role of UN Special Envoy Bill Clinton, the Envoy's priorities and expectations, and how the Office could support IOTWS development in 2006
- Dr. Laura Kong, Director of IOC/ITIC in Hawaii and Dr. William Erb, Head of IOC Perth Regional Programme Office*
IOC overview of ICG/IOTWS activities in the focus countries and the emerging emphasis on downstream issues
- Mr. Earl Kessler, Deputy Executive Director, ADPC*
ADPC's role in implementing donor programs in support of the IOTWS downstream concerns
- Mr. Justin Shone, UNDP*
Examples of mechanisms of coordination: DAD databases that have been developed for Thailand, Indonesia, Sri Lanka, and the Maldives, plus the forthcoming regional and private sector databases.
- Identifying Additional Coordination Mechanisms (Facilitated Discussion)**
Proposed IOC/IOTWS Working Group 5, combined resource libraries, and facilitated meetings, and other options.
- 5:15-5:30 **Overview of Breakout Sessions for Day 2**

Tuesday, January 31, 2006

- 8:30-12:00 **Breakout Sessions**
Breakout sessions will focus on implementation activities at the national and local level ('downstream' issues). Participants will identify current efforts that relate to these activities, suggest opportunities for coordination, identify any barriers to implementation, review gaps from the IOC national assessments (and other sources), and develop action items and schedules.

1. National Warning Center and Disaster Management Capacity Building
 - *National disaster management organizations, institutional capacity, disaster management planning capacity, Incident Command Systems, policy enabling conditions*
2. Warning Communications Systems (national-level and last-mile)
 - *Communications systems, technologies, and procedures such as TARNs and RANET*
3. Local Preparedness: Coastal Community Resilience and Hazard Analysis Capabilities
 - *Tsunami Resilient Communities, hazard mapping*
4. Coastal Disaster Mitigation Policies and Practices
 - *Coastal zone management, land-use practices*

12:00-1:30

Lunch

Opportunity for smaller ad hoc meetings during lunch break.

1:30-3:30

Breakout Session Report Outs and Open Discussion (30 minutes each)

Each breakout group will briefly report out to all participants on the findings in their session and then solicit input on possible linkages among the activities, identify additional organizations and opportunities for coordination, and review the geographic scope of the implementation activities.

3:30-3:45

Break

3:45-4:30

Action Items and Next Steps

Ongoing Coordination Mechanisms, Activity Implementation Strategies, Closing Comments

4:30

Adjourn

ANNEX C: Summary Table of Project Activity Sheets

| Tracking Number | Title of Project | Organization/ contact | Funding Source/Amount | Location | Timeframe | Description of Activities | Description of Activities | | | |
|-----------------|---|---|--|--|-------------|---|--|--|--|---|
| | | | | | | | 1. National Disaster Mgt and Warning Center Capacity | 2. Warning Communications Systems (national and local) | 3. Local Preparedness Coastal Resilience/Hazard Analysis | 4. Coastal Disaster Mitigation Policies and Practices |
| 1 | Regional Program on Capacity Building for Sustainable Recovery and Risk Reduction in Tsunami Affected Country | UNDP/BCPR Sanny Jegillos | Norway | Thailand, Sri Lanka Indonesia Maldives India (affected states) | Jan-Dec 06 | <ul style="list-style-type: none"> Mapping of EWS initiatives (multi-hazards) India – Thailand – Indonesia [Partners : ISDR] Support to EWS: communication set-up Sri Lanka – Maldives Multi – hazard risk assessment review (all 5 countries) Support for local Multi-Hazard Risk Assessment Mapping (Sri Lanka and Maldives) Institutional and legal framework review (all 5 countries) for recovery and risk reduction strengthening (partners: IFRC – ISDR) OVER ALL support to UNDP country offices in EWS/ Risk Assessment) | X | | | |
| 2 | Capacity building for Tsunami Early Warning System | GTZ, Germany | Federal Ministry of Education and Research/ 5 million Euro | Jakarta/ Bonn | 2–3 years | <ul style="list-style-type: none"> Study tour to Indonesia, workshops Designing of scope of activities for assisting BAKORNAS, LIPI Preparedness, awareness, training of BAKORNAS staff for disaster management) | X | | | |
| 3 | Regional Programme on Capacity Building for Sustainable Recovery and Risk Reduction in Tsunami Affected Countries | UNDP/BCPR (Regional Centre Bangkok) Sanny Jegillos Programme coordinator : sanny.jegillos@undp.org Rajesh Sharma (Information Management Specialist: rajesh.sharma@undp.org) | Norway/ 3,590,000 USD/ 695,000 for information mgt component | Thailand/ Sri Lanka/ Indonesia/ Maldives/ India (affected state) | Jan -Dec 06 | Information management component: <ul style="list-style-type: none"> Establish historical databases of disasters (local level, with event/ impact description) using desinventar Support disaster trends analysis Support beneficiary tracking initiatives (India, Sri Lanka) | X | | | |

| Tracking Number | Title of Project | Organization/ contact | Funding Source/Amount | Location | Timeframe | Description of Activities | | | | |
|-----------------|--|----------------------------|--|--|--|--|--|--|--|---|
| | | | | | | | 1. National Disaster Mgt and Warning Center Capacity | 2. Warning Communications Systems (national and local) | 3. Local Preparedness Coastal Resilience/Hazard Analysis | 4. Coastal Disaster Mitigation Policies and Practices |
| 4 | Capacity Building for Disaster Management | UNESCO | UNESCO/ USD 300,000 | Jakarta | 6 months | Training of scientists to deal with the upgraded TEWS, BMG – staff being send to Germany, Japan and the ITIC | X | | | |
| 5 | Enhanced Multi hazard Alert + Response Mechanism in IO to support TEWS | WMO/ IOC/ ISDR Partnership | IOC through Flash appeal (part of the project) | Involving all IO countries most likely 2 training events Asia + Africa | June 2006 more funding maybe required to do more training in 2006 / 2007 | <ul style="list-style-type: none"> • Training the trainees • Educate + training of national Met Services and disaster management and Media on Tsunami, Tsunami EWS etc | X | | | |
| 6 | WMO National Disaster Prevention and Mitigation Country and Regional Level surveys | WMO – Maryam Golnaraghi | WMO | 187countries surveys mitigate support/ Regional Surveys | End of summer 2006 | <ul style="list-style-type: none"> • Identify + rank key hydro- Meteorological hazards • DRR structure and how national met services are linked • Assess technical capacity of National Meteorological + hydro services in support of DRP • Gap + needs analysis | X | | | |

| Tracking Number | Title of Project | Organization/ contact | Funding Source/Amount | Location | Timeframe | Description of Activities | | | | |
|-----------------|--|------------------------------------|-----------------------|-----------|-------------------|---|---|---|---|--|
| | | | | | | | 1. National Disaster Mgt and Warning Center Capacity | 2. Warning Communications Systems (national and local) | 3. Local Preparedness Coastal Resilience/Hazard Analysis | 4. Coastal Disaster Mitigation Policies and Practices |
| 7 | Regional and Sub-regional Exchange of Lessons Learned and Best Practices | USGS, USDA/FS, NOAA, Tt, ADPC, IRG | USAID | IO Region | 2006-October 2007 | <ul style="list-style-type: none"> • Conduct paleoseismology training in Chile for researchers (and institutions) from Sri Lanka, Thailand, Indonesia • Provide follow-up support to trainees from paleoseismology workshop to develop and implement research projects • Conduct regional training in monitoring and alerting, vulnerability and hazard mapping • Conduct regional forum on ICS to share best management practices and lessons learned • Conduct TsunamiResilient Technical Conference for the resort community • Conduct training in vulnerability analysis for regional authorities and NGOS • Develop protocols for regional conferences and workshops submitted by US IOTWS Team members • Review requirements for regional conferences and workshops submitted by US IOTWS Team members on a quarterly basis • Assist USGS and NOAA organize and conduct regional conferences and workshops • Develop and maintain Information Management System (IMS) | X | X | X | X |

| Tracking Number | Title of Project | Organization/ contact | Funding Source/Amount | Location | Timeframe | Description of Activities | 1. National Disaster Mgt and Warning Center Capacity 2. Warning Communications Systems (national and local) 3. Local Preparedness Coastal Resilience/Hazard Analysis 4. Coastal Disaster Mitigation Policies and Practices | | | |
|-----------------|--|--|--|--|------------------------|---|---|---|--|--|
| | | | | | | | | | | |
| 8 | National Disaster Management Planning | ADPC, IRG | USAID | Sri Lanka and India | 2006 | <ul style="list-style-type: none"> Conduct action planning workshop with NDMOs to address capacity building needs Review/leverage USG, private sector, donor initiatives to implement action plans identified by NDMO Integrate US IOTWS Program disaster preparedness activities into India's DMS Project through the development of specific training modules Track and report on USTDA activities to provide linkages to other part of the Program | X | | | |
| 9 | Capacity Building Support for NDMOs | IRG | USAID | Indonesia and India | 1/06-10/07 | <ul style="list-style-type: none"> Analyze assessment information from scoping trip report, IOC assessments, and USTDA DMAT reports and develop a plan for NDMO capacity building Capacity strengthening of NDMOs | X | | | |
| 10 | Maintenance and Capacity Building of Warning Centers | NOAA and USGS | USAID | IO region | 1/06-10/07 | <ul style="list-style-type: none"> Maintain interim warning responsibilities for the IO and provide exchange support through the PTWC Improve monitoring capability of NEIC and PTWC to provide interim tsunami alerts Develop documentation and training on NWS Tsunami Center Operating Practices and Policies | X | | | |
| 11 | Tele-communication Rehabilitation and Reconstruction for Tsunami-hit countries | International Telecommunications Union (ITU) | ITU, Australia/ \$ 509,000 | Maldives, Indonesia, Bangladesh, Sri Lanka | 6/05-6/06 (extendable) | Recommendations on Emergency Telecom & Disaster Planning | | X | | |
| 12 | Disaster Warning Systems Integration and Capacity Building | USTDA/ Jiab rrsriswas@mail.doc.gov | USTDA/ Emergency Supplemental/ \$597,000 | NDWC, Thailand | 12/05-9/06 | Backbone systems for warning capacity | | X | | |

| Tracking Number | Title of Project | Organization/ contact | Funding Source/Amount | Location | Timeframe | Description of Activities | | | | |
|-----------------|---|---|---|---|--------------|--|--|--|--|---|
| | | | | | | | 1. National Disaster Mgt and Warning Center Capacity | 2. Warning Communications Systems (national and local) | 3. Local Preparedness Coastal Resilience/Hazard Analysis | 4. Coastal Disaster Mitigation Policies and Practices |
| 13 | Strengthening the WMO Global Telecommunication system in the Indian Ocean | WMO Maryam Golnaraghi Chief of Natural Disaster Project and Mitigation Tel: 41 22 730 8006 | France for Kenya, Tanzania, Madagascar (USD 1.5 M.) USA for Sri Lanka, Maldives, Thailand, Indonesia, India (NOAA) (amount TBD by NOAA) No funding yet for : Bangladesh, Myanmar, Yemen, Comoros, Djibouti, Seychelles, Somalia IDSR Provided 500,000 USD to enable GTS assessments 100,000 USD of this is available for equipment upgrades | Bangladesh, Maldives, Myanmar, Pakistan, Sri Lanka, Yemen, Comoros, Djibouti, Kenya, Madagascar, Seychelles, Somalia, Tanzania, Thailand, Indonesia | By June 2006 | In total WMO is seeking 1.8 million USD to support the upgrades in the remaining countries: Activities: <ul style="list-style-type: none"> GTS assessment to determine clear plan and procurement needs for equip Procurement installation, training for GTS Ongoing test | | X | | |

| Tracking Number | Title of Project | Organization/ contact | Funding Source/Amount | Location | Timeframe | Description of Activities | | | | |
|-----------------|--------------------------------------|--------------------------|-----------------------|---------------------------|-----------------|---|---|---|---|--|
| | | | | | | | 1. National Disaster Mgt and Warning Center Capacity | 2. Warning Communications Systems (national and local) | 3. Local Preparedness Coastal Resilience/Hazard Analysis | 4. Coastal Disaster Mitigation Policies and Practices |
| 14 | Emergency Communications Capacity | USTDA | USTDA | IO Region | 12/05- 10/07 | <ul style="list-style-type: none"> Develop accepted SOWs with defined government entities in each target country related to emergency communications systems and integrated backbone for warning communications systems Engage technical consultant teams working with target countries on SOWs Implement a scalable decision support platform and communication technology integrating mapping, information, data analysis and warning dissemination Training and capacity building on communication and decision support for emergency warning | | X | | |
| 15 | RANET | NOAA | USAID | Thailand and Sri Lanka | 4/06- 10/07 | <ul style="list-style-type: none"> Establish community information centers (estimated total of 15) which are capable of receiving critical warning information, as well as day-to-day hydro-meteorological and climate information that can aid a variety of resource decisions and long-term mitigation activities. Demonstrate an effective communication strategy that can be expanded beyond the 15 community information centers in the target countries, as well as throughout the region. An assessment and report of community information center operations and sustainability. | | X | | |

| Tracking Number | Title of Project | Organization/ contact | Funding Source/Amount | Location | Timeframe | Description of Activities | | | | |
|-----------------|------------------|--------------------------|-----------------------|--|-----------------|---|---|---|---|--|
| | | | | | | | 1. National Disaster Mgt and Warning Center Capacity | 2. Warning Communications Systems (national and local) | 3. Local Preparedness Coastal Resilience/Hazard Analysis | 4. Coastal Disaster Mitigation Policies and Practices |
| 16 | GTS Upgrades | NOAA | USAID | Sri Lanka, Maldives and Thailand | 10/06- 10/07 | <ul style="list-style-type: none"> Assess current capabilities of GTS in five partner countries Review WMO assessments Based on WMO assessments and ICG requirements, acquire and install equipment for upgrades in the Indian Ocean GTS network Develop design package and acquisition documentation for GTS upgrades for Sri Lanka and Maldives; WAN for Thailand Host Indian Ocean GTS Communication Workshop Award GTS upgrade contract (s) for Sri Lanka, Maldives, WAN upgrade for Thailand Implement GTS upgrades | | X | | |

| Tracking Number | Title of Project | Organization/ contact | Funding Source/Amount | Location | Timeframe | Description of Activities | | | | |
|-----------------|---|--------------------------|-----------------------|-----------|-----------------|---|---|---|---|--|
| | | | | | | | 1. National Disaster Mgt and Warning Center Capacity | 2. Warning Communications Systems (national and local) | 3. Local Preparedness Coastal Resilience/Hazard Analysis | 4. Coastal Disaster Mitigation Policies and Practices |
| 17 | Tsunami Alert Rapid Notification System (TARNS) | USDA/FS and NOAA | USAID | Thailand | 12/05- 10/07 | <p>The TARNS program aims to enhance the existing tsunami warning system in Thailand by working in an interagency forum to develop a</p> <ul style="list-style-type: none"> • “TARNS Implementation Plan” for establishing rapid notification systems for tsunami alerts in Thailand that includes: a regulatory framework, standard operating procedures, checklists, and protocols for training, maintenance of equipment, and testing of the system • Explore appropriate communications technologies outlined in the TARNS Implementation Plan and opportunities for public-private partnerships that could further enhance alert capabilities • Design and conduct TARNS simulation exercises, and identify and establish mechanisms for Thailand to lead training and capacity building efforts in other Indian Ocean countries interested in adopting TARNS | | X | | |
| 18 | Forecast Models, Tide Gauges, Seismic Networks | NOAA and USGS | USAID | IO Region | 2006-2007 | <ul style="list-style-type: none"> • Develop implementation and training plan for forecasting modeling and mapping for the IO • Develop function propagation model for the IO to support forecasts • Identify seismic and GPS station upgrade needs for Indonesia in coordination with other donor support from Australia, Germany, and Japan • Increase seismic capacity in the region | | X | | |

| Tracking Number | Title of Project | Organization/ contact | Funding Source/Amount | Location | Timeframe | Description of Activities | | | | |
|-----------------|--|---|--|---------------------|--------------|--|--|--|--|---|
| | | | | | | | 1. National Disaster Mgt and Warning Center Capacity | 2. Warning Communications Systems (national and local) | 3. Local Preparedness Coastal Resilience/Hazard Analysis | 4. Coastal Disaster Mitigation Policies and Practices |
| 19 | DART Design and Tech Transfer | NOAA and USGS | USAID | IO Region | 1/06-10/07 | <ul style="list-style-type: none"> • Prepare conceptual design of Regional IOTWS including number and locations of tide gauges, DART buoys, seismic stations and a WMO Global Telecommunications System upgrade • Conduct DART Operators and Engineering Workshop • Develop process for responding to international DART II demand • Deploy DART buoys through leveraged support and reporting to regional communication networks and support DART technology transfer to appropriate agencies in Indian Ocean • Install and upgrade tide stations to meet operational requirements for tsunami warning | | X | | |
| 20 | Advisory Assistance to the Department of Disaster Prevention and Mitigation (DDPM) | Deutsche Gesellschaft fuer Technische Zusammenarbeit (GTZ) Mr. Juergen Koch, Thailand Director of GIZ | Fed. Ministry for Economic Cooperation and Development, Bonn/ Germany € 300,000.00 | Head Office of DDPM | 6/05 – 12/06 | 1) CBDRM in 2 pilot areas - Taplamu, Phang-nga Province - Tungkrabok, Trat Province 2) Training of DDPM Officials on CBDRM at the Academy of DDPM | | | X | |
| 21 | (Post-Tsunami reconstruction – not exact project title, but area of work) | UNESCAP Dr. Le Huu Ti. Economic Affairs officer E-mail: ti.unescap@un.org | Government of Republic of Korea/ Total budget (4 projects): USD 1 million | Sri Lanka | 2006 | One project will address disaster preparedness and it will link 2 communities (to be selected) to the national early warning system (communication centre, loudspeaker, etc). | | | X | |

| Tracking Number | Title of Project | Organization/ contact | Funding Source/Amount | Location | Timeframe | Description of Activities | Description of Activities | | | |
|-----------------|---|--------------------------|-----------------------|--------------------|------------|---|--|--|--|---|
| | | | | | | | 1. National Disaster Mgt and Warning Center Capacity | 2. Warning Communications Systems (national and local) | 3. Local Preparedness Coastal Resilience/Hazard Analysis | 4. Coastal Disaster Mitigation Policies and Practices |
| 22 | Coastal Community Resiliency (CCR) Program | NOAA and URI | USAID | IO Region | 1/06-10/07 | <ul style="list-style-type: none"> Identify existing good practices in specified sites in these countries and identify gaps/needs for additional good practices. Compendium of good practices for resorts and resorts areas, larger municipalities and coastal village/ small communities. Conduct focus group meetings to determine needs of each of the three types of communities Develop prototype Indian Ocean CCR Recognition Program for various community type Develop implementation manual and training curriculum for Indian Ocean Tsunami Resilient Communities Recognition Program Regional workshop on CCR benchmarks and tools highlighting partner communities. | | | X | X |
| 23 | Vulnerability Assessments and Hazard Mapping/Modeling for Coastal Areas | TBD under US IOTWS | USAID | Sri Lanka | 2006 | Hazard Mapping | | | X | |
| 24 | Inundation Models | URI | USAID | IO Region | 2006-2007 | <ul style="list-style-type: none"> Apply URI tsunami inundation model to Ranong to determine the levels of inundation from different event scenarios. Evaluation of the maximum tsunami waves that could impact the coast of Ranong Assessment of the coast of Ranong including topography Apply inundation model results to Tsunami Resilient Communities Program | | | X | |
| 25 | Survey and conserve coral reefs near Had Tay muang National Park | WWF Angie Woo | NA | Pang-Nga, Thailand | NA | <ul style="list-style-type: none"> Survey newly discovered coral reefs near park Set up conservation plan in advance of developing sustainable tourism. | | | | X |

| Tracking Number | Title of Project | Organization/ contact | Funding Source/Amount | Location | Timeframe | Description of Activities | Description of Activities | | | |
|-----------------|--|------------------------------------|--|--|-------------------|--|--|--|--|---|
| | | | | | | | 1. National Disaster Mgt and Warning Center Capacity | 2. Warning Communications Systems (national and local) | 3. Local Preparedness Coastal Resilience/Hazard Analysis | 4. Coastal Disaster Mitigation Policies and Practices |
| 26 | Mai Khao Marine Turtle Foundation | WWF, with Marriott Hotel in Phuket | | Phuket | | <ul style="list-style-type: none"> to protect beach or Turtles to fund local community activities | | | | X |
| 27 | Collaboration with American Red Cross CARC | WWF | ARC USD 5 million over 5 year | Thailand, Indonesia, India, Sri Lanka | 2005 - 2010 | <ul style="list-style-type: none"> to reduce future community economic and ecological vulnerability by ensuring environmentally sound policies and practices are adopted by local governments, and actors in reconstruction. E.g. WWF's Green Reconstruction Guidelines. | | | | X |
| 28 | Had Tay Muang National Park Project | WWF, Angie Woo | WWF Italy and Sweden ; UNEP; NOVIB USD 250000 | Phang-Nga | 2005-on going | <ul style="list-style-type: none"> Set up for Park Management Board Outreach to local communities Training of park staff Strengthen marine turtle and coral reef conservations i.e. action plans Infrastructure department e.g. visitor centre | | | | X |
| 29 | Green Coast (regional) | WWF Angie Woo | NOVIB (Oxfam) Netherlands | Phang Nga Province, Thailand (also in India, Indonesia, Sri Lanka) | 12/05-12/06 | Communication, Policy issues, and institutional strengthening i.e. land use planning, community involvement in natural resource planning, management of marine protected areas, sustainable tourism | | | | X |
| 30 | Coastal Zone Disaster Mitigation Measures | NOAA, URI and Tt | USAID | IO Region | 2006-October 2007 | <ul style="list-style-type: none"> Develop hazard analysis tool Develop manual for developing similar hazard analysis tools Develop train-the-trainer program based on development manual Conduct trainings on the hazard analysis tool development manual Conduct regional workshop to identify coastal management benchmarks for coastal mitigation | | | | X |

| Tracking Number | Title of Project | Organization/ contact | Funding Source/Amount | Location | Timeframe | Description of Activities | 1. National Disaster Mgt and Warning Center Capacity 2. Warning Communications Systems (national and local) 3. Local Preparedness Coastal Resilience/Hazard Analysis 4. Coastal Disaster Mitigation Policies and Practices | | | |
|-----------------|---|--|----------------------------------|--|------------|---|---|---|---|---|
| | | | | | | | | | | |
| 31 | Policy and Regulatory Enabling Conditions | IRG | USAID | IO Region | 2006 | <ul style="list-style-type: none"> Review and consolidate policy and regulatory operations for each of the 5 target countries using DMAT reports, scoping report, and IOC national assessments | | | | X |
| 32 | Increased Utilization of space – based capabilities in support of Multi-hazard EWS in IO including Tsunami Warning System | WMO in collaboration with space agencies and IOC Maryam Golnaraghi | No funding yet | Regional | 2006 | <ul style="list-style-type: none"> Focused Regional awareness symposia on space system capability Regional user – workshops to develop user needs for space data and satellite needs (communication) Coordinate meeting with space agencies to address needs. | X | X | | |
| 33 | Regional conference/ workshop on disaster management communications | UN ESCAP Information, communication + space Technology David Hastings hastings@un.org | | Regional: Asia- Pacific (beneficiaries) Bangkok: (meeting location) | 2006 | <p>Responding to a request to hold a meeting covering “all aspects” of disaster management communications.</p> <p><u>Ideas include:</u></p> <ul style="list-style-type: none"> preparing a document on the subject (with separate chapters written by experts) working with other stakeholders in the subject to harmonize desire for progress in this topic based on the harmonized plan, conducting a jointly organized meeting on the subject | X | X | | |
| 34 | Capacity Building for Tsunami affected area in Thailand | ADPC in partnership with DDPA | UNDP/ USD 600,000 | Coastal communities in Tsunami affect area (Phuket and others) | One year | <ul style="list-style-type: none"> Capacity Building Community level approaches for early warning Evacuation drills | X | X | | |
| 35 | Partnership for Disaster Reduction in South – East Asia (PDR SEA 3) | UNESCAP Dr. Le Huu Ti ti.unescap@un.org Mr. Zubair Murshed, ADPC zubair@adpc.net | Dip – ECHO (European Commission) | Indonesia/ Cambodia/ Lao PDR/ Viet Nam. East Timor | 4/ 05-4/06 | <p>Integrate CBDRM into National Development Policy Planning and Implementation</p> <ul style="list-style-type: none"> CBDP database Capacity building Network development | X | | X | |

| Tracking Number | Title of Project | Organization/ contact | Funding Source/Amount | Location | Timeframe | Description of Activities | | | | |
|-----------------|--|--|---|--|-----------------------|---|--|--|--|---|
| | | | | | | | 1. National Disaster Mgt and Warning Center Capacity | 2. Warning Communications Systems (national and local) | 3. Local Preparedness Coastal Resilience/Hazard Analysis | 4. Coastal Disaster Mitigation Policies and Practices |
| 36 | Promoting the development of enhanced regional cooperative mechanisms in disaster management | UN ESCAP Space Technology Applications section unescap_stas@un.org | France, R.O. Korea Internal ESCAP USD 500+K | Region-wide Asia-Pacific | Ongoing since 2002 | <ul style="list-style-type: none"> holding meeting + preparing reports to document technical capabilities, activities in the region and the potential improvements from developing improved cooperation in disaster management, incorporating space technology Promoting the pursuit of better regional cooperative mechanism is in disaster management Drafting a framework for such improved cooperation | X | | | X |
| 37 | D-TRAC Tracking Recovery Assistance Center | D-TRAC Saundra Schimmelpfennig Director | Seeking funding for US\$300,000 | Bang Niang, Phang Nga Province, Thailand | 6 months | <p>Track all recovery activities and make this information accessible to everyone.</p> <p>Center includes: free resource library, conference room, maps, knowledgeable, bilingual staff</p> <p>Website contains NGO information, maps, local information</p> | | X | X | |
| 38 | Program for Hydro-meteorological Disaster Mitigation in Secondary cities in Sri Lanka | ADPC in partnership with SARVODAYA – Sri Lanka | USAID/OF DA for USD 100,000 | KALUTARA | 2 years (2006 - 2007) | <ul style="list-style-type: none"> City & community level Action plan Early warning system design and developing the capacity at city level Develop a volunteer first responder Implementation of community level mitigation project Land user planning | | X | X | |
| 39 | Assessment of Landslide Hazards in CCOP member countries | CCOP Technical Secretariat | Korea Ministry of Science and Technology | CCOP Member Countries | 2002-2005 | <ul style="list-style-type: none"> Assessment of landslide risks area Remote Survey/GIS Technology | | | X | X |

| Tracking Number | Title of Project | Organization/ contact | Funding Source/Amount | Location | Timeframe | Description of Activities | Description of Activities | | | |
|-----------------|---|--|--|---|-----------------------------|--|--|--|--|---|
| | | | | | | | 1. National Disaster Mgt and Warning Center Capacity | 2. Warning Communications Systems (national and local) | 3. Local Preparedness Coastal Resilience/Hazard Analysis | 4. Coastal Disaster Mitigation Policies and Practices |
| 40 | Tsunami Risk Reduction Measures with focus in land use and Rehabilitation | CCOP | Royal Norwegian Ministry of Foreign Affairs for USD700000 | Maldives, Malaysia, Indonesia, Sri Lanka and India | 6/05 – 3/06 | <ul style="list-style-type: none"> Assessment of seawave and Tsunami Risk in Indian Ocean Establish practical guideline for land use and reconstruction, considering future earthquake and tsunami risk Alternative measure to reduce risk Transfer of Knowledge in local and regional level | | | X | X |
| 41 | Andaman Sub-Regional Development Plan | Pieter de Jong Pieter_dejong@urscorp.com | Asian Development Bank | Phuket, Phang Nga and Krabi Provinces (Thailand) | 9 months, ends in June 2006 | <ul style="list-style-type: none"> Regional Plan focused on future tourism, agricultural and overall development of roads, major towns and rural communities. Includes a risk reduction component. | | | X | X |
| 42 | CCOP-NGI-DMR Tsunami Risk Assessment focusing on land-use planning and rehabilitation | CCOP (Coordination Committee for Geosciences Program in East and South East Asia) NGI (Norwegian Geotechnical Institute) DMR (Department of Mineral Resources, Thailand) | NGI (Norwegian Geotechnical Institute) USD 800,000 | Tsunami affected areas (Phuket – Phang-na Area) | 6/05 – 3/06 | <ul style="list-style-type: none"> Causes of Tsunamis and their potential distribution, magnitudes, and frequencies in the Andaman Sea, Indian Ocean Rehabilitation strategies for affected areas Input to future sustainable development policy for coastal settlement and infrastructure | | | X | X |
| 43 | PROMISE – community based disaster risk management specialty for hydro – met hazard | Implementing organization - ADPC | USAID/OF DA US\$1.25 million | Sri Lanka, Philippines, Vietnam, Pakistan, Bangladesh | 3 years | <ul style="list-style-type: none"> flood early warning system community mobilization training and TOT awareness and education land use management vulnerability assessment | X | X | X | |
| 44 | DiscNet | ASEAN Committee on Disaster Management & PDC | ACDM/PDC & ASEAN Member Countries/ approx 200-300 per year | ASEAN Headquarters Jakarta | ongoing | ICT Gap Analysis, ASEAN Disaster Inventory, Exercises and workshops | X | X | X | X |

| Tracking Number | Title of Project | Organization/ contact | Funding Source/Amount | Location | Timeframe | Description of Activities | | | | |
|-----------------|---|--|---|--|-----------|---|--|--|--|---|
| | | | | | | | 1. National Disaster Mgt and Warning Center Capacity | 2. Warning Communications Systems (national and local) | 3. Local Preparedness Coastal Resilience/Hazard Analysis | 4. Coastal Disaster Mitigation Policies and Practices |
| 45 | Develop IOTWS numerous sub-projects available from IOC Paris | IOC Patricio Bernal and Partner | FLASH APPEAL 10 million | IOC Paris | ongoing | Develop on Indian Ocean Tsunami Warning System that is multi-hazard, regional, activities include equipment/ instrument selection, development, communications, warning mechanism, training, model development, risk assessment, preparedness, mitigation, etc. Support of the ICG process is critical to the process as well as maintenance of governmental infrastructure. Donor agency coordination is necessary. | X | X | X | X |
| 46 | There will be several projects but currently the funding is in the regional Tsunami multi-donor voluntary trust fund at UNESCAP | UNESCAP Khalid Husain husain@un.org | Govt of Thailand and Sweden Currently, the trust fund has USD 12.5 million | Indian Ocean and Southeast Asia region | 2-3 years | Main activities at project level To fund Asia – Pacific regional/sub-regional (and possibly also national) organizations on early warning system arrangement for tsunamis and other hazards Main focus will be on capacity building and not so much on hardware/ equipment installation Focus on regional linkages as well as how info is disseminated from this level to on-the-ground level Large scope, not just detection + communication but also community resilience building to disasters Other activities (pre-project) <ul style="list-style-type: none"> stakeholder consultation needs assessment + mapping (state of EWS development on technology + capacity building in region) regional seminar | X | X | X | X |
| 47 | Tech assistance to DMC – Sri Lanka Through UWDP for developing “Real Map for safer Sri Lanka” | DMC & UNDP (ADPC provides tech assistance) | UNDP | Sri Lanka | One Year | <ul style="list-style-type: none"> Organize workshop to get the feedback from stakeholder institutions Development of Road Map for safer Sri Lanka Development of concept note for potential short/ medium/ long term projects Development of DM plan for Sri Lanka | X | X | X | X |

| Tracking Number | Title of Project | Organization/ contact | Funding Source/Amount | Location | Timeframe | Description of Activities | | | | |
|-----------------|---|--|--|---------------------------------------|-----------|--|---|---|---|--|
| | | | | | | | 1. National Disaster Mgt and Warning Center Capacity | 2. Warning Communications Systems (national and local) | 3. Local Preparedness Coastal Resilience/Hazard Analysis | 4. Coastal Disaster Mitigation Policies and Practices |
| 48 | Sub regional Development Plan for the Tsunami Affected Andaman Region (Phuket, Punga, Krabi- Thailand | Kittipun Poonjumnern Tesco Ltd. 21/11 Sukhumvit 18 Klongtoey, Bangkok 10110 01- 832-2030 | ADB/ Ministry of finance, Thailand/2 million USD | Phuket/ Punga/ Krabi - Thailand | 6/05-7/06 | Hazard Mitigation, Regional Planning, Land Use, Environmental Architecture, Capacity Building, Infrastructure, GIS, Governmental Policy, Legal Process, Tourism Planning | X | X | X | X |